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The American Journal of Public Health and the Nation's Health is published by the American Public Health Association, Inc., at 383 Broadway, Albany 1, N. Y. Executive office 1790 Broadway, New York 19, N. Y. Subscription price $15.00 per year for United States, elsewhere $16.00 to cover postage and handling. Single copies $1.50 postpaid. Entered as second-class matter at the Post Office at Albany, N. Y., September 17, 1932, under the Act of March 3, 1879. Published monthly.

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The American Journal of Public Health is indexed in the Industrial Arts Index and, in part, in the Quarterly Cumulative Index Medicus, Biological Abstracts, Chemical Abstracts, Engineering Index, and Public Affairs Information Service.

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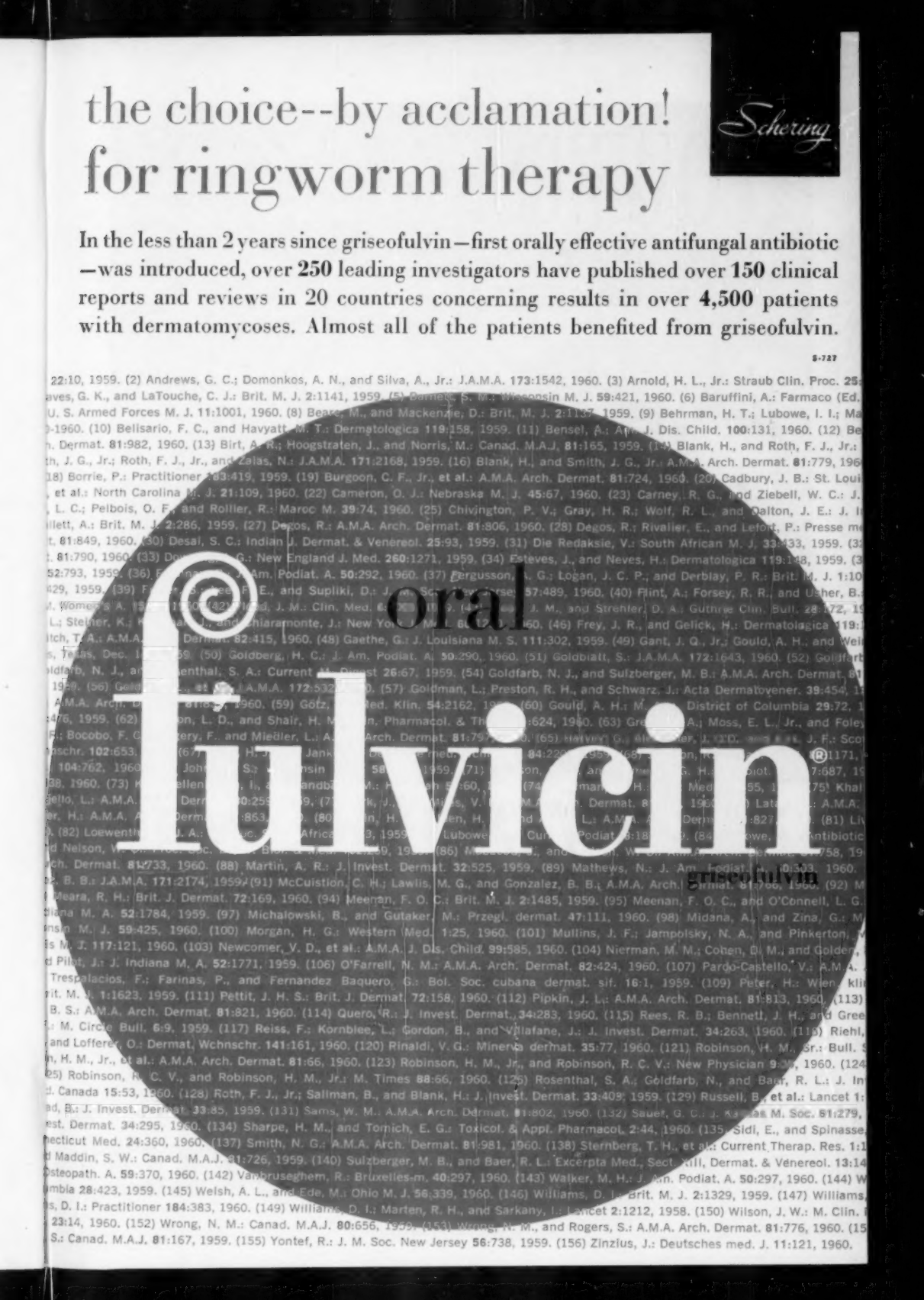

22:10, 1959. (2) Andrews, G. C.; Domonkos, A. N., and Silva, A., Jr.: J.A.M.A. 173:1542, 1960. (3) Arnold, H. L., Jr.: Straub Clin. Proc. 25:
aves, G. K., and LaTouche, C. J.: Brit. M. J. 2:1141, 1959. (5) Barnett, S. M.: Wisconsin M. J. 59:421, 1960. (6) Baruffini, A.: Farmaco (Ed.
U. S. Armed Forces M. J. 11:1001, 1960. (8) Beare, M., and Mackenzie, D.: Brit. M. J. 2:1167, 1959. (9) Behrman, H. T.; Lubowe, I. I.; Ma
)-1960. (10) Belisario, F. C., and Havyatt, M. T.: Dermatologica 119:158, 1959. (11) Bensel, A.: Am. J. Dis. Child. 100:131, 1960. (12) Be
n. Dermat. 81:982, 1960. (13) Birt, A. R.; Hoogstraten, J., and Norris, M.: Canad. M.A.J. 81:165, 1959. (14) Blank, H., and Roth, F. J., Jr.:
th, J. G., Jr.; Roth, F. J., Jr., and Zaias, N.: J.A.M.A. 171:2168, 1959. (16) Blank, H., and Smith, J. G., Jr.: A.M.A. Arch. Dermat. 81:779, 196
18) Borrie, P.: Practitioner 183:419, 1959. (19) Burgoon, C. F., Jr., et al.: A.M.A. Arch. Dermat. 81:724, 1960. (20) Cadbury, J. B.: St. Loui
, et al.: North Carolina M. J. 21:109, 1960. (22) Cameron, O. J.: Nebraska M. J. 45:67, 1960. (23) Carney, R. G., and Ziebell, W. C.: J.
, L. C.; Pelbois, O. F., and Rollier, R.: Maroc M. 39:74, 1960. (25) Chivington, P. V.; Gray, H. R.; Wolf, R. L., and Dalton, J. E.: J. I
illett, A.: Brit. M. J. 2:286, 1959. (27) Degos, R.: A.M.A. Arch. Dermat. 81:806, 1960. (28) Degos, R.; Rivalier, E., and Lefort, P.: Presse me
t. 61:849, 1960. (30) Desai, S. C.: Indian J. Dermat. & Venereol. 25:93, 1959. (31) Die Redaksie, V.: South African M. J. 33:433, 1959. (3
t. 81:790, 1960. (33) Do G.: New England J. Med. 260:1271, 1959. (34) Esteves, J., and Neves, H.: Dermatologica 119:148, 1959. (3
52:793, 1959. (36) F Am. Podiat. A. 50:292, 1960. (37) Fergusson, A. G.; Logan, J. C. P., and Derbiay, P. R.: Brit. M. J. 1:10
429, 1959. (39) F E., and Supliki, D.: J. S 57:489, 1960. (40) Flint, A.; Forsey, R. R., and Usher, B.
t. Women's A. 1 d, J. M.: Clin. Med. 6 J. M., and Strehler, D. A.: Guthrie Clin. Bull. 28:72, 19
L.; Stelner, K.; H chiaramonte, J.: New Yo 60. (46) Frey, J. R., and Gelick, H.: Dermatologica 119:1
itch, T. A.: A.M.A. Dermat. 82:415, 1960. (48) Gaethe, G.: J. Louisiana M. S. 111:302, 1959. (49) Gant, J. Q., Jr.; Gould, A. H., and Wei
s, Texas, Dec. 1 59. (50) Goldberg, H. C.: J. Am. Podiat. A. 50:290, 1960. (51) Goldblatt, S.: J.A.M.A. 172:1643, 1960. (52) Goldfarb
oldfarb, N. J., an enthal, S. A.: Current M. Digest 26:67, 1959. (54) Goldfarb, N. J., and Sulzberger, M. B.: A.M.A. Arch. Dermat. 81
1959. (56) Ge et al.: J.A.M.A. 172:532 60. (57) Goldman, L.; Preston, R. H., and Schwarz, J.: Acta Dermatovener. 39:454, 1
A.M.A. Arch. D 81:879, 1960. (59) Götz, ed. Klin. 54:2162, 19 (60) Gould, A. H.: M District of Columbia 29:72, 1
476, 1959. (62) on, L. D., and Shair, H. M in, Pharmacol. & Th 624, 1960. (63) Gr A.; Moss, E. L., Jr., and Foley
R.: Bocobo, F. G ery, F., and Mießler, L.: A Arch. Dermat. 81:79 60. (65) Harvey, G.; die ter, J. T. D. et al. J. F.: Sco
pschr. 102:653. (67 H Jank me 84:22 (66) on, 171,
104:762, 1960 John S. nsin 58 1959. (71) on, ar s. H. biot 7:687, 19
88, 1960. (73) K ellen , I., andb M.: H n 60, (74 rman H. Med 55, 1 (75) Khal
ello, L.: A.M.A. Derm 0:25 59, (7 k, J., es, V. M. Dermat. 8 1960 Late A.M.A.
er, H.: A.M.A. A Derm 863 n, H en, H nd L.; A.M.A. Derm 827 (81) Liv
, (82) Loewenth J. A.: c. Africa 3, 1959 Lubowe Cur Podiat. 18 (84 owe, ntibiotic
d Nelson, W. Bl 59, 19 (86) M and W 758, 19
ch. Dermat. 81:733, 1960. (88) Martin, A. R.: J. Invest. Dermat. 32:525, 1959. (89) Mathews, N.: J. Am. Podiat. A. 50:309, 1960.
2. B. B.: J.A.M.A. 171:2174, 1959. (91) McCuistion, C. H.; Lawlis, M. G., and Gonzalez, B. B.: A.M.A. Arch. Dermat. 81:766, 1960. (92) M
Meara, R. H.: Brit. J. Dermat. 72:169, 1960. (94) Meenan, F. O. C.: Brit. M. J. 2:1485, 1959. (95) Meenan, F. O. C., and O'Connell, L. G.
iana M. A. 52:1784, 1959. (97) Michalowski, B., and Gutaker, M.: Przegl. dermat. 47:111, 1960. (98) Midana, A., and Zina, G.: M
nsin M. J. 59:425, 1960. (100) Morgan, H. G.: Western Med. 1:25, 1960. (101) Mullins, J. F.; Jampolsky, N. A., and Pinkerton,
is M. J. 117:121, 1960. (103) Newcomer, V. D., et al.: A.M.A. J. Dis. Child. 99:585, 1960. (104) Nierman, M. M.; Cohen, D. M., and Golden
d Pilat, J.: J. Indiana M. A. 52:1771, 1959. (106) O'Farrell, N. M.: A.M.A. Arch. Dermat. 82:424, 1960. (107) Pardo-Castello, V.: A.M.A.
Trespalacios, F.; Farinas, P., and Fernandez Baquero, G.: Bol. Soc. cubana dermat. sif. 16:1, 1959. (109) Peter, H.: Wien klin
rit. M. J. 1:1623, 1959. (111) Pettit, J. H. S.: Brit. J. Dermat. 72:158, 1960. (112) Pipkin, J. L.: A.M.A. Arch. Dermat. 81:813, 1960. (113)
B. S.: A.M.A. Arch. Dermat. 81:821, 1960. (114) Quero, R.: J. Invest. Dermat. 34:283, 1960. (115) Rees, R. B.; Bennett, J. H., and Gree
M. Circle Bull. 6:9, 1959. (117) Reiss, F.; Kornblee, L.; Gordon, B., and Villafane, J.: J. Invest. Dermat. 34:263, 1960. (118) Riehl,
and Lofferer, O.: Dermat. Wchnschr. 141:161, 1960. (120) Rinaldi, V. G.: Minerva dermat. 35:77, 1960. (121) Robinson, H. M., Sr.: Bull.
n, H. M., Jr., et al.: A.M.A. Arch. Dermat. 81:66, 1960. (123) Robinson, H. M., Jr., and Robinson, R. C. V.: New Physician 9:3 1960. (124
25) Robinson, R. C. V., and Robinson, H. M., Jr.: M. Times 88:66, 1960. (125) Rosenthal, S. A.; Goldfarb, N., and Barr, R. L.: J. In
d. Canada 15:53, 1960. (128) Roth, F. J., Jr.; Sallman, B., and Blank, H.: J. Invest. Dermat. 33:409, 1959. (129) Russell, B., et al.: Lancet 1:
ad, B.: J. Invest. Dermat. 33:85, 1959. (131) Sams, W. M.: A.M.A. Arch. Dermat. 81:802, 1960. (132) Sauer, G. C.: J. Kansas M. Soc. 61:279,
est. Dermat. 34:295, 1960. (134) Sharpe, H. M., and Tomich, E. G.: Toxicol. & Appl. Pharmacol. 2:44, 1960. (135) Sidi, E., and Spinasse
necticut Med. 24:360, 1960. (137) Smith, N. G.: A.M.A. Arch. Dermat. 81:981, 1960. (138) Sternberg, T. H., et al.: Current Therap. Res. 1:1
d Maddin, S. W.: Canad. M.A.J. 81:726, 1959. (140) Sulzberger, M. B., and Baer, R. L.: Excerpta Med., Sect. XIII, Dermat. & Venereol. 13:14
Osteopath. A. 59:370, 1960. (142) Vanbruseghem, R.: Bruxelles-m. 40:297, 1960. (143) Walker, M. H.: J. Am. Podiat. A. 50:297, 1960. (144) W
mbia 28:423, 1959. (145) Welsh, A. L., and Ede, M.: Ohio M. J. 56:339, 1960. (146) Williams, D. I.: Brit. M. J. 2:1329, 1959. (147) Williams,
s, D. I.: Practitioner 184:383, 1960. (149) Williams, D. I.; Marten, R. H., and Sarkany, I.: Lancet 2:1212, 1958. (150) Wilson, J. W.: M. Clin.
23:14, 1960. (152) Wrong, N. M.: Canad. M.A.J. 80:656, 1959. (153) Wrong, N. M., and Rogers, S.: A.M.A. Arch. Dermat. 81:776, 1960. (15
S.: Canad. M.A.J. 81:167, 1959. (155) Yontef, R.: J. M. Soc. New Jersey 56:738, 1959. (156) Zinzius, J.: Deutsches med. J. 11:121, 1960.

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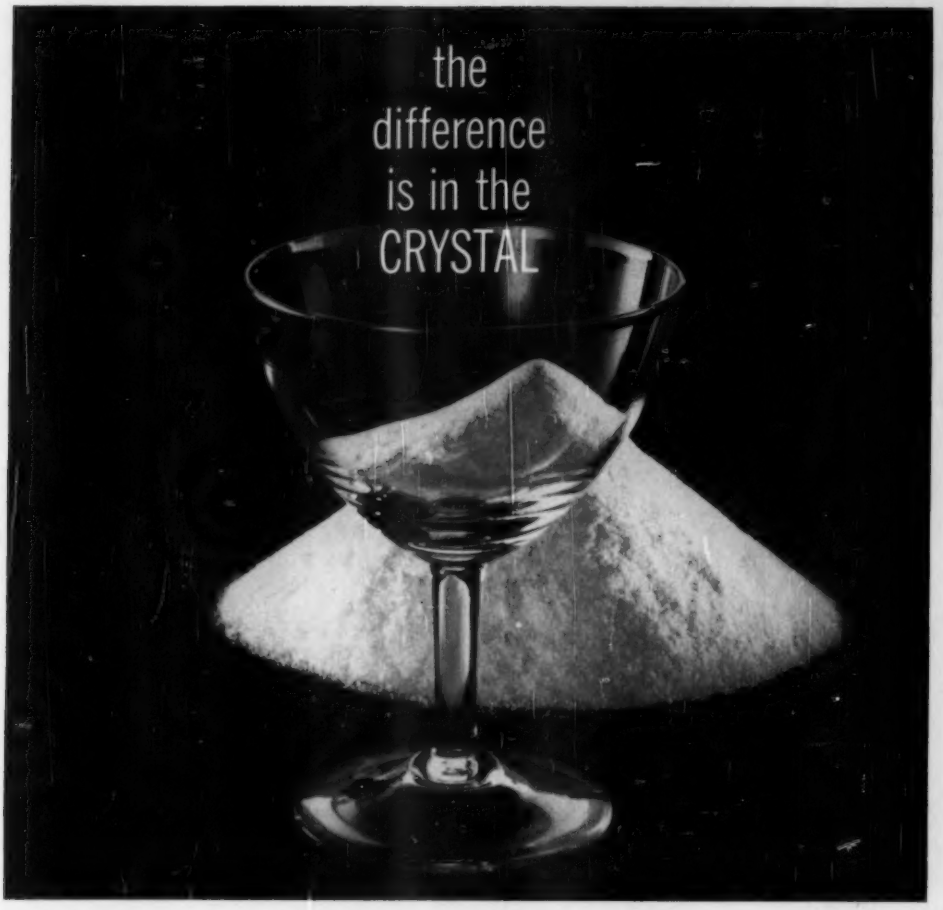

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---

[1] Shaw, Jas. H., Caries-producing Factors: A Decade of Dental Research, J. Am. Dent. A., 55:785 (Dec.) 1957.

[2] Ludwig, T. G., and Bibby, B. G., Acid Production from Different Carbohydrate Foods in Plaque and Saliva; Further Observations Upon the Caries-Producing Potentialities of Various Foodstuffs, J. Dent. Research, 36:56 (Feb.) 1957.

[3] Bibby, B. G., Effect of Sugar Content of Foodstuffs on Their Caries-Producing Potentialities, J. Am. Dent. A., 51:293 (Sept.) 1955.

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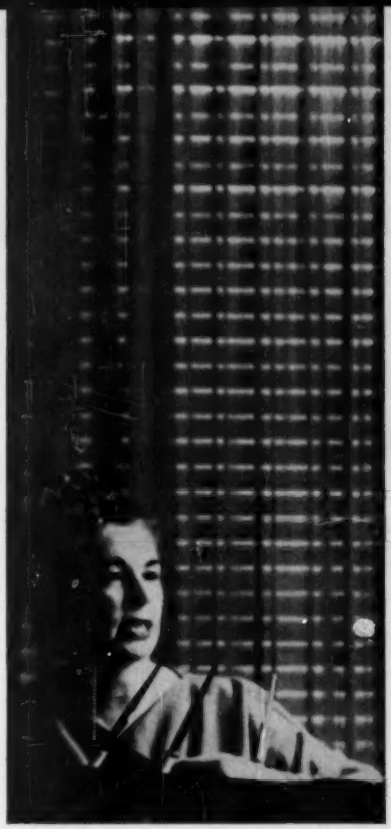

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*Hilleman, M. R., Charney, J., Tytell, A. A., Weibl, C., Cornfeld, D., Ichter, J. T., Riley, H. D., Jr. and Huang, N.: Investigation into the development and clinical testing of a poliomyelitis vaccine containing standardized amounts of purified poliomyelitis virus antigens, 1960 Symposium on Polio Vaccines, Newark, New Jersey, April 20, 1960.

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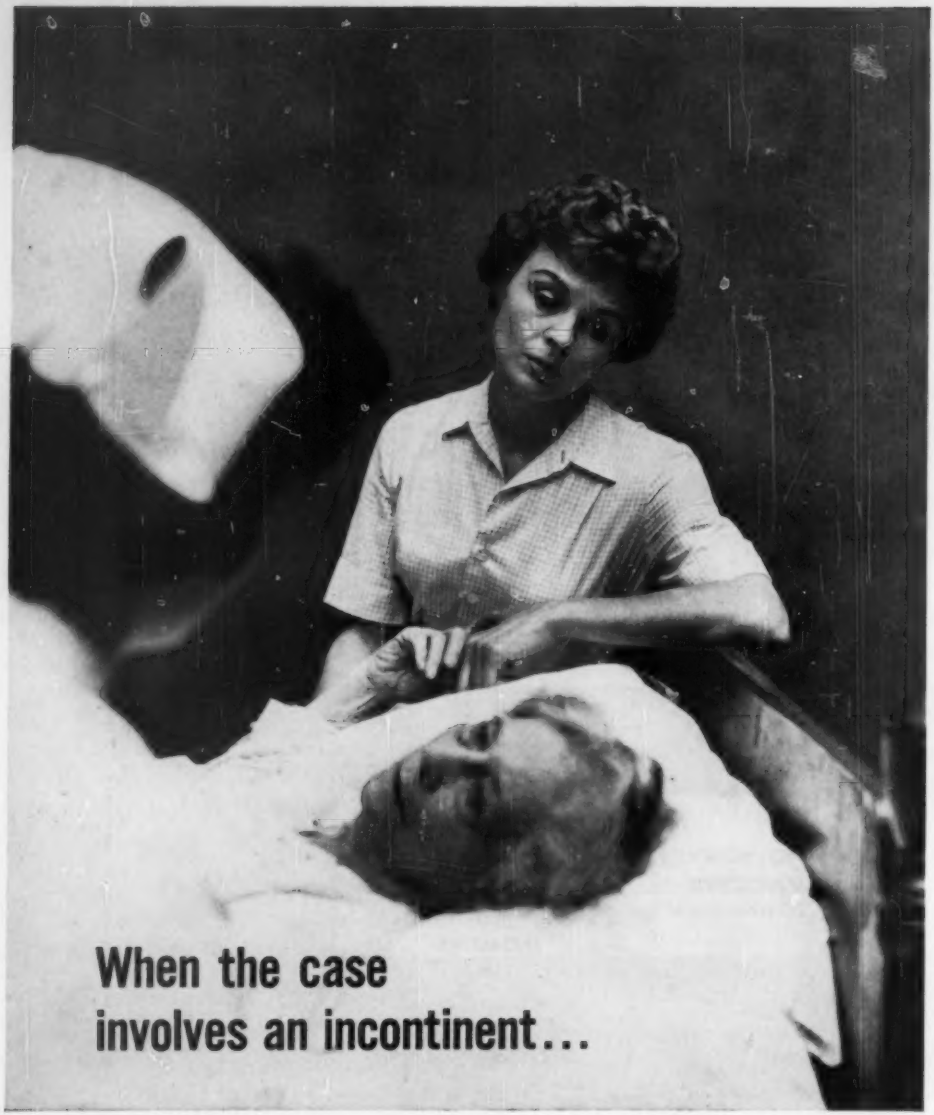

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1. Beckman, H.: Drugs-Their Nature, Action and Use, Philadelphia, Saunders, 1958. 2. Nathan, L. A.: Arch. Pediat. 75:251, 1958.

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1. Mathieu, P. L., Jr., et al.: Rhode Island M. J. 42:172, 1959.

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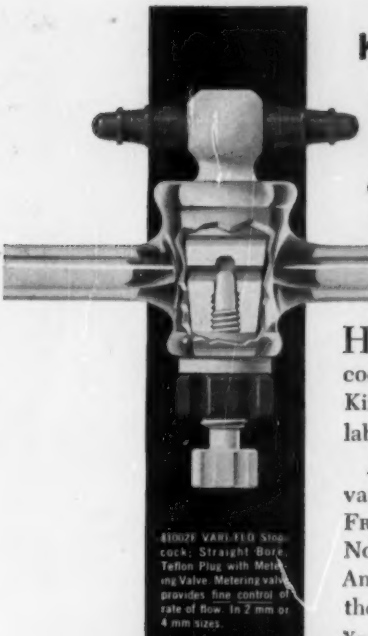

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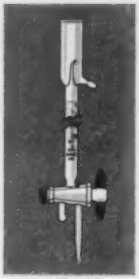

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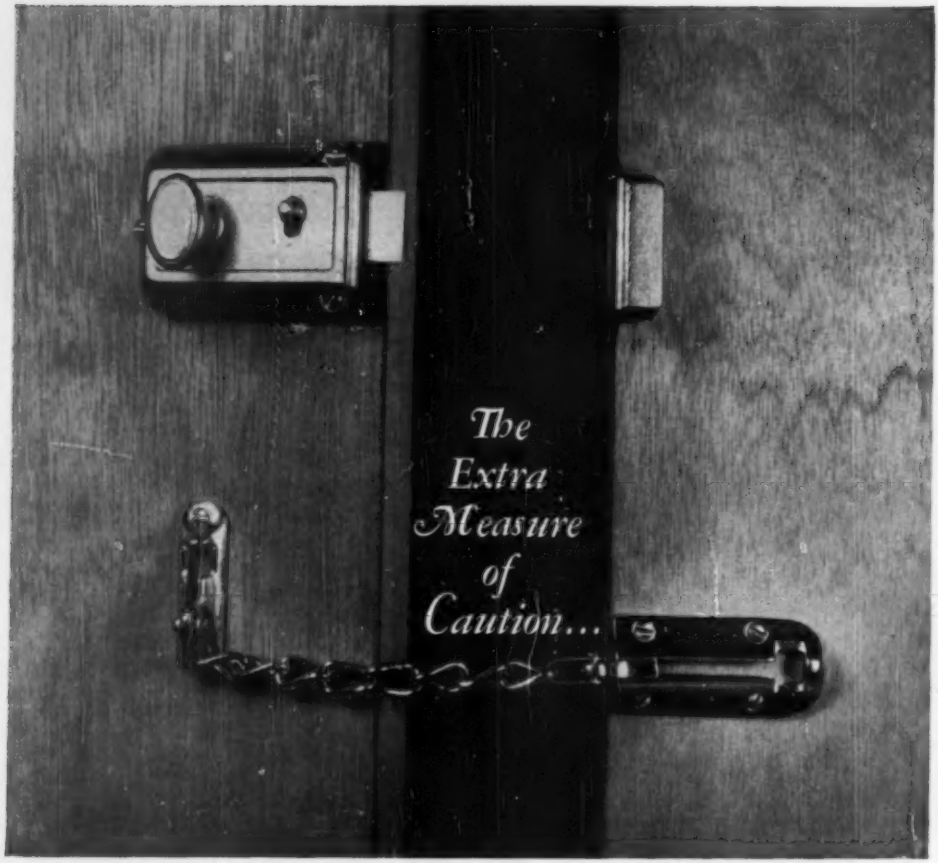

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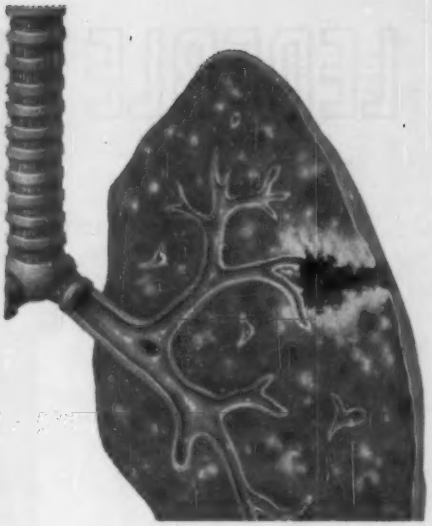

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1. Davey, W. N.: GP 19:107, No. 1, 1959.

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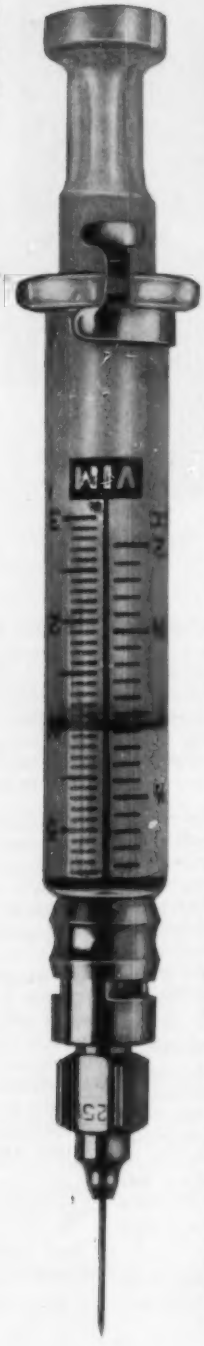

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1. Stephens, V. C., *et al.:* J. Am. Pharm. A. (Scient. Ed.), *48*:620, 1959.
2. Salitsky, S., *et al.:* Antibiotics Annual, p. 893, 1959-1960.
3. Reichelderfer, T. E., *et al.:* Antibiotics Annual, p. 899, 1959-1960.
4. Kuder, H. V.: Clin. Pharmacol. & Therap., in press.

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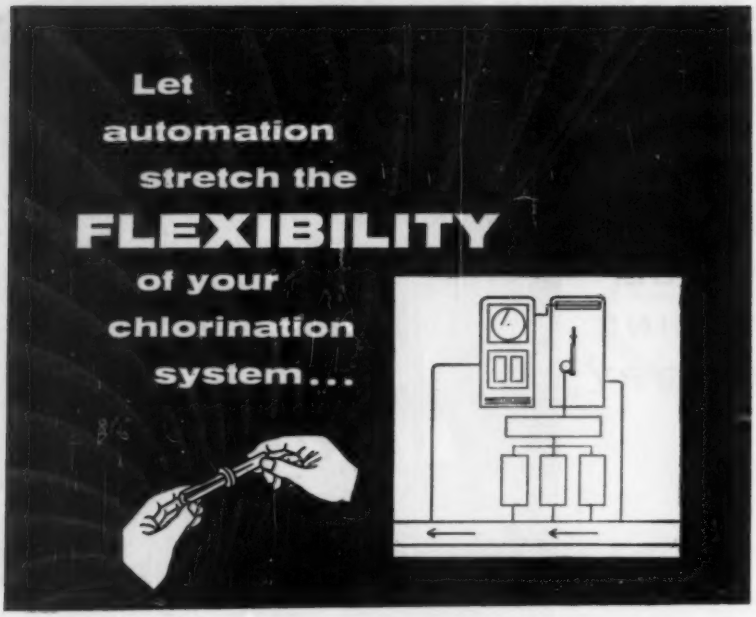

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Journal of Public Health

Medical care provided through public assistance programs is a topic of considerable current interest. Yet, essential data to evaluate such programs have largely been lacking. A significant approach to this important problem is made here in terms of utilization data and the inferences to be drawn from them.

THE EVALUATION OF OLD AGE ASSISTANCE MEDICAL CARE PROGRAMS

S. J. Axelrod, M.D., M.P.H., F.A.P.H.A.

In 1941, Reed and Clark, discussing the need for appraisal of public assistance medical care programs, wrote: "Considering the magnitude of these programs, surprisingly little is known about them."[1] Almost 20 years later, public assistance medical care programs are of even greater magnitude and the same observation can still be made: surprisingly little is known about them.

The growth of these programs can be gauged by expenditures of federal, state, and local funds for medical care of the needy over the years. In 1939, annual expenditures of such funds were estimated to be about 50 million dollars. By 1949, this figure had risen to 125 million dollars. Since then, there has been more than a threefold increase. Currently, medical care expenditures in public assistance programs, including both money payments to recipients to purchase medical care as well as vendor payments, are estimated to be about 420 million dollars a year.[2] These increases are due in part to rising medical care costs and in part to the more adequate provision of medical care services to recipients of public assistance. Amendments to the Social Security Act in 1950, 1956, and 1958 have encouraged more states to give more medical care to more recipients of public assistance by making possible federal matching of funds for vendor payments for medical care and by increasing financial participation by the federal government in medical care expenditures for recipients of public assistance.

Prior to the 1956 Amendments, which earmarked federal matching funds for medical care, there were no more than

20 states with relatively comprehensive medical care programs for recipients of public assistance. In the other states, the programs were considerably limited in scope, providing, for example, hospital care only, or there were serious limitations in financial support, ranging from monthly maximums on the amount allowed for medical care to no public assistance funds at all for medical care in 16 states.[3] At present, largely as the result of liberalized federal participation in financing, some medical care is being provided under one or more of the categorical assistance programs in all but two of the 53 states and territories. However, of the states which have recently initiated or expanded their medical care programs, none has a program which may be described as comprehensive.[4]

In the Old Age Assistance programs in 1958, 49 of the 53 states and territories made specific provision for nursing home care; 39 for drugs; 36 for dental care; 35 for hospitalization; 35 for physicians' and other practitioners' services; and 34 for prosthetic appliances.[5] It has been estimated that about 70 per cent of the payments made to suppliers of medical services in behalf of public assistance recipients in all four categories were made for Old Age Assistance recipients.

The rising costs of the medical care component of public assistance, particularly for the 2.4 million persons on Old Age Assistance, has led to public concern, and there has been a growing recognition of the need to evaluate public assistance medical care programs. As a result, systematic reviews of state and local programs have been undertaken with increasing frequency in recent years.[6] Typically, the commissions, the committees, and the consultants making these reviews describe the administrative structure of the program, the scope of services provided, and the patterns of providing services. Cost data are usually presented in some detail; service or utilization data, with few notable exceptions, are not presented, generally because they are not available.

Such program reviews are of only limited usefulness in the evaluation of public assistance medical care programs. To be sure, some inferences concerning the quality of the care provided may be made from descriptions of administrative patterns with respect to staff organization and responsibility, the presence or absence of professional advisory committees, the scope of services available, and the manner in which they are provided. But such basic questions as: How much medical care is actually being received? and: Is it enough? cannot even be approached without carefully collected and properly interpreted utilization data. Furthermore, as regards qualitative adequacy, the question, To what extent do recipients receive medical care meeting accepted standards of quality? must also be answered. Measures of the quality of care by professional service auditing ("medical audits") would provide the answer.[7] However, these technics, which were developed for use in hospitals and in selected health insurance plans, have not been used in public welfare medical care program reviews.

A notable feature of the program reviews mentioned above is their emphasis on cost data. This is due to the traditionally fiscal orientation of public assistance programs and is reinforced by the prevailing method of purchasing medical care in public assistance programs, i.e., by vendor payments. Dollar figures originating in the agency's accounting office flow quite naturally as a by-product of the process of paying physicians, hospitals, and other vendors. Emphasis on the almost exclusive collection of cost data stems also from widespread lack of appreciation of the relevance of utilization data for program evaluation. Both cost and utilization

data are necessary for program evaluation. But in assessing the relative value of each for this purpose, it should be borne in mind that when utilization data are available, a conversion can readily be made to cost data by applying prices to the items of service. The reverse process, the conversion of cost information into utilization data, is more difficult, and at times, not possible. Moreover, differences in fee schedules and hospital charges invalidate interprogram comparisons based on cost data alone by obscuring variations between programs in the volume of service rendered.

The American Public Welfare Association, among other activities directed toward the improvement of public welfare administration, has given special attention to medical care programs in public welfare departments. It has recently developed a "Self-Evaluation Schedule for Medical Assistance Programs,"[8] and is currently sponsoring, with funds secured from the Public Health Service, a program of research in the administrative aspects of public assistance medical care programs. Studies leading to the improved administration of these programs are now being carried out by the Bureau of Public Health Economics, University of Michigan.

In reviewing research efforts to date,[9] it soon became evident that there is very little information on the amount of medical care received by recipients of public assistance. A preliminary field survey indicated that even in the relatively few states which collect such data, there are important gaps. Also, the limited information which was available did not lend itself to meaningful interstate comparisons because of differences in definitions of service and the absence of basic case load data from which to develop utilization rates for comparative purposes.

Recognizing that evaluation is a critical element of sound administration and that adequate utilization data are necessary for the evaluation of public assistance medical care programs, it was decided to focus the initial phase of the research program on the collection of such data and on the quantitative appraisal of services received by recipients of public assistance. Although it is difficult to separate quantity from quality in regard to the adequacy of medical care, studies of quality as such, e.g., the application of medical audit technics, have been deferred.

The selection of the public assistance medical care programs for study in the initial phase of the research was in part dictated by considerations of time and cost. It was decided to limit this phase to Old Age Assistance medical care programs in a relatively small number of states. The OAA category is a more homogeneous population group than the other three categories. The largest proportion of total outlays for medical care in public assistance is absorbed by this group. Finally, the OAA category was selected because of widespread interest in medical care for the aged, an interest which has been intensified by the debate over the Forand Bill.

No attempt was made in this study to present a national picture of OAA medical care programs or to estimate the amount of medical care received by the 2.4 million persons on Old Age Assistance. Attention was directed rather toward the development of satisfactory methods of collecting adequate utilization data, solving the problems which were encountered, and indicating the use of these data in program evaluation.

A word of caution regarding the limitation of utilization data is in order. Records of the use of services are limited to those services for which the administering agency makes a payment. In some areas, welfare recipients may receive a broad array of services for which no payment is made by the welfare

agency and of which the agency will have no record. Such "free" services vary in amount and, if they are of some magnitude, they should be taken into account in making interprogram comparisons in terms of utilization data.

Two criteria were used for the selection of states. In order to secure utilization data on a broad array of services, only those states with comprehensive medical care programs for OAA recipients were considered. The state program would have to include at least physicians' care—general practitioner and specialist—in office and home; hospital care; dental care; and prescribed drugs, to be selected for the study. Second, states were chosen whose record systems make the collection of utilization data feasible. For example, state programs which provide for important elements of medical care through money payments to the recipient, rather than by vendor payments, present many complex problems in the collection of utilization data.

With these considerations in mind, the Old Age Assistance medical care programs of four states, Rhode Island, Connecticut, Maryland, and Illinois, were selected for study. The Maryland program is distinctive in that it is administered by the health department; there are also some differences among all four states in the services provided and in payment to vendors. However, the similarities between them in terms of the services provided, in methods of providing service, and in other administrative features far outweigh the differences, so that utilization data were collected in four basically similar, comprehensive medical care programs for the needy aged. The methodology of data collection and the complete findings of this study will be presented in a monograph to be published by the American Public Welfare Association.[10]

This paper deals with some of the ways in which utilization data can be used in the evaluation of OAA medical care programs. Illustrative data from three of the four states studied are presented. If the question, How much medical care is actually being received? can be answered, then a second question, Is it enough? must also be asked. In the absence of generally accepted norms of quantitative adequacy, utilization data, taken from published reports of the experience of a medical care plan for an insured population 65 years of age and over (the Health Insurance Plan of Greater New York) and of the experience of the general population 65 years and over (the National Health Survey) are used as a basis for comparison.

Table 1 shows the proportion of individuals on the Old Age Assistance rolls in three state programs at any time during the study period who received any type of medical care. About three-fourths of eligible individuals received some type of medical care in a 12-month period in each of the three state programs. This proportion is a measure of the spread of receipt of service throughout the assistance case load and is useful in making both quantitative and qualitative appraisals. Without this measure, it is difficult to appraise the significance of the volume of medical care provided by a given program. A large volume of care may mean either that many individuals are receiving relatively few services, or that many services are being provided for a relatively few individuals. In terms of qualitative appraisal, it can be stated that failure to receive necessary medical care means poor quality care. The assumption that about a quarter of the OAA recipients in each of the programs received no medical care of any kind in a 12-month period because they did not need any is not tenable in view of what we know in general about the health status and health needs of the older age group.

When the proportion of eligible individuals in the three programs receiving specified types of care is examined, it is seen that in two of the three programs, State A and State B, a larger proportion of eligible recipients received prescribed drugs than physicians' care. At the very least this raises questions about the quality of the medical supervision of OAA recipients who receive prescribed drugs but no physicians' care in a 12-month period. One possible explanation for this finding is that the physicians render "free" care in that they do not submit bills for OAA recipients but the prescriptions they write are billed for by less charitably minded pharmacists.

Dental care was received by the smallest proportion of eligible individuals receiving any type of care in the 12-month period. Even with the relatively large proportion of edentulous persons among those 65 years of age and over, there undoubtedly is a greater need for dental care, other than for artificial dentures, than is indicated by the receipt of dental care in these programs. Thus quantitative appraisal of this type of care forms a basis for making judgments about its adequacy.

Table 2 shows the utilization of physicians' services in the three OAA study states, in a comparable program in the Province of Saskatchewan, in an insured population group and in the general population 65 years and over.* Physicians' care was received by 55 per cent of the OAA case load in State A, by 62 per cent in States B and C, and by 69 per cent in the Saskatchewan program in a 12-month period. In answering the question, Is this enough?, the proportion of OAA recipients who do not see a physician in this period is the critical figure. From this standpoint these data indicate underutilization and unmet need. It may be argued that the 30 to 45 per cent of OAA recipients who do not receive physicians' care during the course of a year do not experi-

* Except for State C and the Province of Saskatchewan, utilization data are based on samples and are subject to sampling errors. The magniture of the sampling errors in the data for States A and B is dealt with in the final report. For the purposes of this paper it can simply be stated that sampling errors do not invalidate the general conclusions.

Table 1—Utilization of Medical Care, Selected Old Age Assistance Programs

	State A	State B	State C
1. Per cent of eligible individuals receiving any type of care in 12-month period	73	79	73
2. Per cent of eligible individuals receiving specified type of care in 12-month period			
a. physicians' care	55	62	62
b. hospitalization	9	19	10*
c. prescribed drugs	60	65	56
d. dental care	4	5	2
e. eye care, including glasses	13	15	†
f. chiropody	8	11	‡

* Estimated.
† Less than 1 per cent. Care provided only for postcataract surgical cases.
‡ Care not provided.

Table 2—Use of Physicians, Selected Old Age Assistance Programs, and Persons 65 Years and Over in Insurance Plan and in General Population

	OAA Programs				Insured Population 65 Years and Over	General Population 65 Years and Over
	State A	State B	State C	Saskatchewan* (1955-1956)	HIP† (1955-1956)	United States‡ (1957)
1. Per cent of individuals receiving physicians' care in 12-month period	55	62	62	69	70	64
2. Average number of office and home calls per person in 12-month period	4.4	5.0	7.1	3.9	5.8	6.8
3. Type of call, per cent of all calls	100	100	100	100	100	100
Office	41	36	42	67	91	64
Home day	56	63	56	33	9	36
Home night	3	1	2			
4. Number of physicians seen in 12-month period						
All individuals, per cent	100	100	100	100	100	100
No physicians seen	46	38	38	31	30	36
Saw 1 physician	40	42	**	**	**	**
2 physicians	10	14	**	**	**	**
3 physicians	3	3	**	**	**	**
4 or more physicians	1	2	**	**	**	**

* Saskatchewan Department of Public Health. Annual Report, 1955-1956. (Nov.), 1956, and Saskatchewan Medical Services Division. Statistical Tables, Fiscal Year Ending March 31, 1956. (Dec.), 1956.

† Shapiro, S., and Einhorn, M. Experience with Older Members in a Prepaid Medical Care Plan. Pub. Health Rep. 73:687, 1958.

‡ National Health Survey. Preliminary Report on Volume of Physician Visits, United States, July-September, 1957. (Feb.), 1958.

** Information not available.

ence any illness and do not need physicians' care. The implication that medical care is not needed by this group depreciates the value of preventive medicine and ignores the lessons learned from the application of screening technics and periodic physical examinations in uncovering unmet needs for medical care in healthier groups of the population. The qualitative adequacy of the OAA programs is also called into question when one considers the reservoir of untreated chronic illness and disability known to exist in this socioeconomic group. Even among a younger and presumably healthier group of the aged, and one to which physicians' care is more readily accessible, namely, the subscribers 65 years of age and over in the Health Insurance Plan of Greater New York, 30 per cent fail to see a physician in a 12-month period. As estimated by the National Health Survey, the comparable figure for the entire population of the United States, 65 years and over, is 36 per cent.

The average number of office and home physicians' calls per person per recipient-year ranges from 4.4 to 7.1 in the three study states, and from 3.9 to 6.8 in the other population groups 65 and over, shown in Table 2 and used

as a basis for comparison. Without taking into account such factors as age and sex composition, socioeconomic status, and other variables affecting utilization of physician services, strict comparisons cannot be made. However, this type of utilization data does provide bench marks which are useful for measuring program performance on a year-to-year basis. Experience of OAA medical care programs which have kept physician utilization data over a number of years shows that physician utilization has been relatively stable or gradually declining. Concurrently, drug utilization in these same programs has risen steadily.

Data on the distribution of physicians' calls by type of call show marked similarities among the three OAA programs studied, and sharp differences with the other groups 65 years and over. In the three OAA programs, home calls and calls to nursing homes exceed office visits. The great excess of office visits over home calls in the HIP population and in the general population 65 years and over, reflects the healthier, ambulatory status of these population groups and the emphasis on office calls in today's medical practice. The volume of physicians' home and office care received by recipients in the three study states and in the Saskatchewan program is a very rough measure of the need for physicians' care outside the hospital. In view of the findings one wonders at the adequacy of medical care assistance programs which are limited to hospital care.

In the free choice, "no-economic-barrier," system of medical care represented by the three OAA programs studied, the myths of "abuse of service," as indicated by a large volume of night calls, or "shopping around for physicians," as indicated by the indiscriminate use of physicians, do not assume reality. Only from 1 to 3 per cent of all calls were night calls in the three state programs. As for "shopping around," the data suggest that there is a fairly high degree of stability in the usage of physicians by OAA recipients. Forty per cent of OAA recipients in State A received all their care from only one physician in a 12-month period and about the same proportion, 42 per cent, in State B received all of their physicians' care from one physician. This means that about three-quarters of all OAA recipients who received any physicians' care received their care from one physician.

With physician utilization data in hand, it becomes possible to evaluate widely accepted, but untested, administrative procedures designed to reduce the costs of physician's care. For example, are control technics, such as placing limitations on the number of physicians' calls in a given period, or for a given diagnosis, or prior authorization, or other program restrictions, really necessary? If applied, are they effective?

Table 3 shows the utilization of hospital care in the three study states, the Saskatchewan program, in an insured population, and in the general population 65 years and over. Some persons are hospitalized more than once during a year and differences between the per cent of individuals hospitalized in a 12-month period and the number of discharges per 100 persons is a measure of the extent of multiple hospital admissions. In an aged population, severe and prolonged illness and physical deterioration account for many of the multiple admissions. However, examination of cases with multiple admissions in OAA programs and studies of multiple admissions in other programs[11] have shown that lack of adequate physician supervision and failure to provide post-hospital nursing care in the home have been important factors. The savings which could be realized through preventing multiple hospital admissions due to such causes have been demonstrated.

Table 3—Use of Hospitals, Selected Old Age Assistance Programs, and Persons 65 Years and Over in Insurance Plan and in General Population

	OAA Programs				Insured Population 65 Years and Over	General Population 65 Years and Over
	State A	State B	State C	Saskatchewan* (1955-1956)	HIP† (1955-1956)	United States‡ (1957-1958)
1. Per cent of individuals hospitalized in 12-month period	9	19	10	**	**	10.5§
2. Discharges per 100 persons in 12-month period	13	28.5	13	29.8	12.1	12.1
3. Days of hospital care per person per year	2.2	5.6	2.4	5.1	1.6	1.8
4. Average duration of stay per discharge	16.6	19.4	17.2	17.1	13.2	14.7

* Saskatchewan Department of Health. Annual Report of the Saskatchewan Hospital Services Plan, 1956. (Feb.), 1957.

† Shapiro, S., and Einhorn, M. Experience with Older Members in a Prepaid Medical Care Plan. Pub. Health Rep. 73:687, 1958.

‡ National Health Survey, Hospitalization: Patients Discharged from Short-Stay Hospitals, United States, July, 1957-June, 1958 (Dec.), 1958.

** Information not available.

§ Estimated.

Hospital utilization, measured by discharge rates and days of hospital care per recipient-year, is much greater in State B and in the Saskatchewan OAA program than in the other cases. As with physician utilization data, comparisons of OAA hospital experience with that of other population groups 65 years and over is hazardous. Age and sex composition, socioeconomic status, supply of hospital beds, methods of payment of hospitals, and availability of nursing home beds, to mention some of the important factors associated with differences in hospital use, must be considered. However, none of the factors which are believed to account for the very high rate of hospital utilization in Saskatchewan—the sparsely settled rural economy, the greater supply of hospital beds relative to population, and the lesser supply of physicians—appear to be operative in State B and the reasons for its very high hospital utilization rate have not been satisfactorily explained. Suffice it to say that utilization data of this type pinpoint areas which require further study and administrative attention.

With the high cost of hospital care and the pressures for welfare agencies to pay full costs to hospitals for the care of the indigent, the volume of hospital care is an important consideration. Unnecessary hospital admissions and unnecessarily prolonged stays due to administrative laxity within the hospital or the absence of more appropriate alternative facilities, such as a nursing home or a home care program are wasteful and, as has been demonstrated, can be controlled. Hospital utilization data are necessary in directing attention to situations requiring control. For example, by using hospitalization data in comparing State B with State A, it is found that State B has a higher proportion of its OAA case load admitted to the hospital, has more multiple admissions, and a longer average duration of stay of its

hospitalized OAA recipients. Consequently State B uses more than twice the number of hospital days per recipient than State A. The reasons for all these differences are not known, but it is significant that State A requires reauthorization for hospital care for all cases of 21 days or more. Also the method of payment may be an important factor. State B pays on the basis of full cost and State A pays on the basis of a flat per diem rate which is considerably less than cost.

Table 4 shows the utilization of drugs, dental, and eye care in the three study states and in the Saskatchewan program. The increasing costs of drug care in public assistance programs is a matter of widespread concern. Not only is drug utilization increasing, but costs per prescription are rising as newer and hopefully more efficacious preparations are becoming available. In two of the three study states, prescribed drugs take a larger bite of the welfare medical dollar than do physicians' services. The average number of prescriptions per recipient-year ranges from 7.4 in Saskatchewan to 15 in State B. There is some difference of opinion on the role of drug therapy in meeting the health needs of an aged population with a heavy burden of chronic illness. Does high drug utilization mean that need is more nearly being met or does it mean overprescribing and medical care of questionable quality? In any event, utilization data are a necessary first step in evaluating this aspect of medical care.

Summary

The evaluation of public assistance medical care programs is discussed in the light of their growth and the gaps in our knowledge about them. Utilization data from selected Old Age Assistance medical care programs are pre-

Table 4—Use of Prescribed Drugs, Dental Care, and Eye Care, Selected Old Age Assistance Programs

	State A	State B	State C	Saskatchewan* (1955-1956)
1. Prescribed drugs				
a. Per cent of individuals receiving in 12-month period	60	65	56	†
b. Average number of prescriptions per eligible individual in 12-month period	†	15	9	7.4
2. Dental care				
a. Per cent of individuals receiving in 12-month period	4	5	2	†
b. Number of dentures and denture repairs per 100 persons in 12-month period	3	5	4	7.9
3. Eye care				
a. Per cent of individuals receiving in 12-month period	13	14	‡	†
b. Number of eyeglasses and repairs per 100 persons in 12-month period	14	19	**	19

* Saskatchewan Medical Services Division. Statistical Tables, Fiscal Year Ending March 31, 1956 (Dec.), 1956.
† Information not available.
‡ Less than 1 per cent.
** Provided only for postcataract surgical cases.

sented and the ways in which such data can be used to form the basis for evaluation are indicated.

Adequate utilization data are necessary for the evaluation of public assistance medical care programs. Only when such data are available is appraisal of quantitative adequacy possible. Establishment of utilization bench marks permits comparisons with other medical care programs as standards of quantitative adequacy. Utilization data enable the testing of the appropriateness and effectiveness of administrative control procedures. Finally, since quality of service cannot be considered apart from its quantity, utilization data provide a basis for making some judgments about qualitative adequacy.

REFERENCES

1. Reed, L. S., and Clark, D. A. Appraising Public Medical Services. A.J.P.H. 31:421 (May), 1941.
2. Published and unpublished material available in the Bureau of Public Assistance, Social Security Administration, Washington, D. C.
3. American Public Welfare Association. Role of the State Public Assistance Agency in Medical Care. I. General Aspects of Medical Assistance. (Sept.), 1953.
4. Bierman, P. Where Are We Going in Tax-Supported Medical Care? Paper presented at APWA Southwest Regional Conference (Apr. 7), 1959.
5. Social Security Administration, Bureau of Public Assistance. Medical Care in Public Assistance: Information Relating to Changes, Early 1937 to January, 1958. State Letter No. 333 (Apr. 8), 1958.
6. See for example: American Medical Association, Council on Medical Service. A Report on Medical Care for the Indigent in Eighteen Selected Communities. 1955; New Jersey Commission to Study the Administration of Public Medical Care. The Report and Recommendations (Oct.), 1959.
7. a. Rosenfeld, L. Quality of Medical Care in Hospitals. A.J.P.H. 47:856 (July), 1957.
   b. Daily, E. F., and Moorehead, M. A. A Method of Evaluating and Improving the Quality of Medical Care. A.J.P.H. 46:848 (July), 1956.
8. American Public Welfare Association. Self-Evaluation Schedule for Medical Assistance Programs, 1957.
9. American Public Welfare Association and Bureau of Public Health Economics, University of Michigan. Public Assistance Medical Care: Areas of Needed Research and an Annotated Bibliography. (Nov.), 1959.
10. American Public Welfare Association and Bureau of Public Health Economics, University of Michigan. Old Age Assistance Medical Care: A Four-State Study. (To be published.)
11. a. Roemer, M. I., and Meyers, G. W. Multiple Admissions to Hospital. Canad. J. Pub. Health 47:469 (Nov.), 1956.
    b. Koplin, A. N.; Hutchison, R.; and Johnson, B. K. Influence of a Managing Physician on Multiple Hospital Admissions. A.J.P.H. 49:1174 (Sept.), 1959.

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This paper was presented before the Medical Care Section of the American Public Health Association at the Eighty-Seventh Annual Meeting in Atlantic City, N. J., October 22, 1959.

This report is based on some of the findings of a study to be published by the American Public Welfare Association under the title, "Old Age Assistance Medical Care: A Four State Study."

This study was aided by a Research Grant from the National Institutes of Health, Public Health Service.

Collectively bargained health insurance benefits are a significant part of the medical care picture in the United States. But what do they achieve, both from an economic viewpoint and in terms of services to patients? The Steelworkers Union undertook a good hard look. Some results are presented here.

THE STEELWORKERS SURVEY THEIR HEALTH SERVICES

A PRELIMINARY REPORT[a]

I. S. Falk, Ph.D., F.A.P.H.A., and Joseph J. Senturia, B.S.C., A.M.

LIKE other major labor unions, the United Steelworkers of America has succeeded in winning collectively-bargained health insurance benefits for nearly all of its members. The general pattern of the insurance is laid down by the provisions in insurance agreements between the union and the largest basic steel companies, and these benefits tend to become the current standard throughout the industry.

The standard contracts now cover (1) on a service basis, inpatient hospitalization in semiprivate rooms up to 120 days and hospital outpatient care,[b] and (2) on an indemnity basis, fees toward physicians' charges for obstetrical and surgical services according to a $300 maximum schedule and for specified ancillary services.[c] The schedule fees are accepted by physicians as full payments for patients with incomes under specified levels throughout Pennsylvania and, under special arrangements, in some other areas; elsewhere the benefit fees are only fixed indemnity amounts toward the physicians' charges. Some Steelworkers have limited cash benefits for inpatient medical attendance or for broader supplementary benefits.

The insurance premiums are usually shared equally by employers and employees, but there are some agreements under which the employer pays the whole cost.[d] About two-thirds of the insurance is effected through Blue Cross and Blue Shield plans, and most of the remainder through commercial insurance companies which underwrite the

[a] A more comprehensive report has been published since this paper was presented: Special Study on the Medical Care Program for Steelworkers and Their Families. United Steelworkers of America, Pittsburgh, Pa., September, 1960, 108 pages.

[b] For accident cases, minor surgery, radiation therapy, and diagnostic services (x-ray, BMR, EKG, and EEC).

[c] Professional anesthesia, radiation therapy, and diagnostic services (x-ray, BMR, EKG, and EEC).

[d] The shared (contributory) financing which prevailed when this paper was presented has now been largely replaced by noncontributory arrangements. Collective bargaining agreements negotiated with many large companies in late 1959 and early 1960 provide for the employers to pay the whole cost of the insurance (except that certain specified increases in future cost would be offsets against cost-of-living wage increases which may otherwise become payable). This noncontributory pattern has now been widely extended to other companies which have agreements with the Union.

same or different benefits. Uniform company-wide insurance contracts are common for the larger multi-establishment employers. Where group practice plans are available they are utilized either through direct employer contracts or through election by the local employees to pay additional contributions in order to supplement the more limited benefits provided by the employers' standard contracts. The group practice coverage extends to only a few per cent of all Steelworkers, but it is of special interest because it provides opportunity to compare experience under open-panel and group-practice contracts.

The Steelworkers Union is proud of the achievement that almost all of its nearly 1.1 million members in the United States have some health insurance for themselves, their spouses, and children under 19. But coverage for nearly all of these three million persons is not of itself a measure of the effectiveness or the value of the insurance protection. On the contrary, though appreciative of the substantial contribution of the insurance to their health, welfare, and economic security, the members have expressed considerable dissatisfaction, especially over the limited scope of the benefits, the frequent failure of obstetrical and surgical benefits to cover the physicians' charges, and the repeated increases of premium check-offs for the same benefits.[a]

The dissatisfaction led the union's convention in September, 1958, to adopt a resolution expressing its disappointment that the organizations underwriting the benefits are failing to meet Steelworkers' health needs at reasonable cost, and directing the union's officers to study the potentials of alternative arrangements—including the possibility of establishing their own hospitals, clinics and other facilities and of developing fully prepaid, comprehensive group practice services. We were then asked by the officers to make such a study for them. The analysis is still in progress and at this time we can give you only a preliminary report on the results, citing provisional data which are subject to change.

[a] As indicated earlier, most of the insurance contracts have become noncontributory since this paper was presented, and there are now no check-offs for insurance under such contracts. However, the dissatisfaction over rising costs, without improvement of benefits, remains. Even when paid by the employers, higher insurance costs tend to reduce what employees can expect to obtain in wages, vacations, pensions, etc., and may offset cost-of-living supplements to wages.

Methods of Study

Even a brief description of the methods of the survey may be helpful, especially because we had only a limited period for the study and had to rely mainly on data already potentially available.

For a comparative study of health insurance provisions for Steelworkers and for the members of other labor unions, we relied mainly on published information.

For a study of current insurance programs in the steel industry, we utilized a 1958 study of the union's 2,200 insurance contracts,[a] giving numbers having insurance by size of employment unit, and we made a new analysis of benefits and insurance carriers for all of the largest employers and for samples of smaller units.

Anticipating that the health benefits would have to be examined on an area basis, we made a geographical analysis of all contracts and found there were 23 counties (in 12 states) each with 10,000 or more employees, accounting for nearly two-thirds of all Steelworkers; our further detailed explorations were concentrated mainly on areas which

[a] Special Report on Insurance, Pensions and Supplemental Unemployment Benefits. United Steelworkers of America, September, 1958. (Since this paper was presented we have also had the results of a similar 1960 study, with the same title, September, 1960.)

embrace these counties. For each area we compiled as comprehensive information as we could obtain. The Blue Cross and Blue Shield plans participated in planning the tabulations and furnished as much as time and their resources permitted. Their data apply to a year's experience (July 1, 1957-June 30, 1958), in the aggregate for about 1.2 million persons—giving details of insurance provisions, exposure, premiums, services, and costs. We obtained more or less similar detailed data for five large commercial insurance contracts covering about 375,000 persons, and summary data through a brief mail questionnaire for many other large employers utilizing commercial insurance. We also prepared county tables on medical personnel[a] and on hospitals and other facilities.[b]

We had hoped to examine all Steelworker experience under group practice plans, but thus far have been able to study only the experience with Kaiser Foundation Health Plans in California. We had also hoped to arrange for surveys among representative Steelworker families—to provide independent data on insurance, morbidity, services and expenditures, but this did not prove feasible within the time schedule of the study.

We have made no special study of quality of care under the Steelworker contracts, having to depend on available information on this aspect of medical practices under the current insurance patterns.

In this preliminary report we cite the findings mainly from the Blue Cross-Blue Shield and the group practice analyses.[c]

There are strengths and weaknesses in our data. However, in the brief period available to us we could compile as much as we did only because of the strong support and assistance of the union's officers, its Insurance, Pension and Unemployment Benefits Department, and its staff throughout the country, and the cooperation and aid of employers and insurance carriers—to all of whom we are grateful.

Some Findings from the Study

The brief summary we can present today is focused on four specific questions. First: How much does the Steelworker health insurance cost?—The available information suggests that in 1957-1958 the standard Steelworker contracts involved premiums equivalent to nearly 7 cents per employment hour, about $11 a month per employee, and about $44 a year per person covered. About 70 per cent was paid for hospitalization benefits and about 30 per cent for obstetrical, surgical, and ancillary benefits. Under the Blue Cross-Blue Shield contracts, the per capita expenditures for benefits ($38.38) were 91.5 per cent of premiums and about 42 per cent of the per capita total private expenditures for health and medical care ($92) for the United States in the same year (1957-1958).[d] The aggregate annual insurance premiums were probably in the range $125-$150 million.

[a] Derived from Physician-Population Counts in the United States by County, Tabulations Based on the Twentieth Edition of the American Medical Directory: 1958. American Medical Association, Chicago, Ill., 1959, 98 pp.

[b] Obtained from the Division of Hospital and Medical Facilities (Program Evaluation and Reports Branch). Public Health Service, Department of Health, Education, and Welfare, Washington, D. C.

[c] More extensive data on Blue Cross-Blue Shield experiences, and data on commercial insurance experiences, are now available in the report cited in footnote,[a] page 11.

[d] Excludes private expenditures for industrial inplant services, philanthropy and construction of medical facilities. Derived from Expenditures for Health and Medical Care, 1928-1929—1957-1958. I. C. Merriam. Research and Statistics Note No. 26, Division of Program Research, Social Security Administration, Department of Health, Education, and Welfare, Washington, D. C., September 17, 1959.

Second: What were the Steelworkers and their dependents receiving in services under their standard insurance programs?—Using a few Blue Cross indexes, based on 1.2 million persons covered, it appears that in the 12-month period they had about 135 hospital admissions and about 1,032 days of care per 1,000 persons—about the same rate of admissions as, but a larger volume of care than, all persons insured under Blue Cross plans in the United States,[a] and much more than the 80-100 admissions and 500-700 days per 1,000 persons common under good group practice plans which provide comprehensive benefits.[b] Using Blue Shield indexes from the experience of 1.0 million insured, the steelworker population had about 69 inpatient nonobstetrical surgical cases per 1,000 as against 33-55 per 1,000 persons in good group practice plans.[c] The total nonobstetrical surgical rate, inpatient and ambulatory, was about 148 per 1,000 compared to 135 per 1,000 in comparable general Blue Shield experience in nine states[d] and to about 100 per 1,000 in two group practice programs for which data are available.[e]

A striking finding in our study is the large variation around average Steelworker rates under standard contracts in 17 geographical areas. For example, the ratios of the highest rate to the lowest rate were 1.6 for hospitalization, 3.1 for inpatient nonobstetrical surgical claims, and 6.7 for ambulatory surgical claims. The highest area rates exceeded the average rates by 34 per cent for admissions, by 32 per cent for hospital days, by 120 per cent for inpatient nonobstetrical surgery, and by 135 per cent for the ambulatory surgical cases. And similar variations appear by type of case and by type of operation.

Lacking age and sex data on the composition of the exposure groups in most areas, we cannot exclude these factors by standardization. However, inspection of the age-sex proportionate distributions of the surgical cases in four areas with considerable differences in total rates shows that these factors cannot explain the rate variations.

Until better data are available and more extensive analyses can be made, large area variations in service rates cannot be reliably or definitely interpreted. They must be recognized, however, as a striking aspect of the volume of service under insurance contracts. The age-sex analysis and the inspection of correlations between (a) hospitalization and surgical rates, and (b) indexes of hospitals, beds, and physicians per 1,000 persons in the various areas leave a strong, though still tentative, impression that the variations probably reflect primarily area differences in the patterns of medical practice rather than real differences in amounts of illness or of essential service needs among the insured groups. And this is supported by the occurrence of similar area variations in service rates for the general Blue Cross and Blue Shield experiences throughout the country.

Third: How effective is the insurance in protecting against costs?—The Blue Cross data show that hospitalization benefits covered about 96 per cent of charges incurred in hospitals within a 120-day maximum benefit period, so that only families with longer cases

[a] Technical Service Bulletins, March, 1958 and 1959, Blue Cross Commission, Chicago, Ill., and supplementary information from the Blue Cross Association, showing 137 admissions and 1,007 days per 1,000 persons.

[b] Annual reports and special studies of various group practice experiences.

[c] Rates derived from various experiences (Kaiser Foundation Health Plans, California; Group Health Cooperative of Puget Sound, Seattle, Wash.; Group Health Association, Washington, D. C.; and Health Insurance Plan of Greater New York).

[d] Rates derived from Experience of Blue Shield Plans: 1957, published by Blue Shield Medical Care Plans, Chicago, Ill.

[e] Kaiser Foundation Health Plan (Oakland, Calif.) contract for a U. S. Steel (Columbia-Geneva) group in Pittsburg, Calif.; and Health Insurance Plan of Greater New York.

could have been left with burdensome residual hospital charges. But the Blue Shield data give a different picture: Though heavily weighted with experience in Pennsylvania (where the benefits are on a service basis up to $4,000 individual and $6,000 family income), the benefits covered only 84 per cent of the charges reported by the physicians; the charges for surgical and obstetrical services exceeded benefits in 37 per cent of the cases (as high as 68 per cent in an area outside Pennsylvania), and for such cases the average benefits were only 65 per cent of the average charges. Thus, it appears that with these indemnity type benefits many insured persons found themselves without assurance as to just what protection the premiums had bought for them.

Since the standard Steelworker insurance does not apply to many kinds of medical needs,[a] the combined hospital, physician, and ancillary benefits apparently covered less than 40 per cent of average total private costs of medical care, leaving on the average more than 60 per cent to be met by the families through other insurance or by out-of-pocket expenditures. Also, it covered about 64 per cent of "currently insurable expenditures" exclusive of dental charges while comprehensive group practice—as under the Kaiser Foundation Health Plans—can cover about 84 per cent.

Fourth: How economical are the main insurance patterns?—The insurance costs are determined by three factors: overhead costs (carrier retentions); unit costs of the services; and volumes of service.

As such insurance goes, the overhead costs for the standard contracts are modest for hospitalization benefits (about 7 per cent of premiums for Blue Cross) but are considerably higher for obstetrical, surgical, and ancillary benefits (about 14 per cent for Blue Shield) —the size of the latter figure reflecting among other elements the pattern of fee-for-service payments.

As to unit costs, nearly all of the Steelworkers' insurance applies to services provided through open panel practitioners serving mainly in their private offices and in the hospitals. Except for periodic ineffectual resistance to rising premiums, the insurance contracts function largely as signed blank checks to pay the costs determined principally by the physicians and the hospitals. Whether the unit costs are or are not too high now, the insurance program is confronted by constantly rising costs for hospital care, and by pressures for higher fee schedules for physician and ancillary services—especially with respect to requests for a shift from a limited indemnity to a full service basis. The Steelworkers—like other consumer groups—have small influence on the results.

As to types and volumes of services, the practices are determined in some measure by effective demand on the part of the insured but mainly by the decisions of physicians. Rising volumes of services are in the public interest until they approximate or attain adequacy levels; beyond that they represent —variously—luxuries, wastes, or hazards. But what are the adequacy levels? There are no altogether satisfactory or comprehensive standards, especially since any such standards must take the organization of the services into account. Nevertheless, we find some answers to our questions within the boundaries of our study.

Unless it can be said that the insured Steelworker populations were receiving

[a] E.g.: physician's charges for nonsurgical hospital, office, and home cases (except for covered ancillary services); dental care; nursing care (except general nursing in the hospital); purchased medicines, home remedies and appliances; routine eye examinations and eyeglasses; injections (noninpatient); most laboratory tests; services of physiotherapists; care in nursing homes or rehabilitation centers; etc.

too little service in the areas where the rates were low or average, we must ask whether they were receiving too much in the areas where the rates were high. If we disregard the below-average rates and use the average rates as representing reasonably adequate volumes of service, in the areas with the highest rates about one-fourth of the hospital admissions and days and over one-half of the nonobstetrical inpatient or ambulatory surgical operations were excessive.

Alternatively, we may take as the benchmark the service rates that are available from good group practice plans (including the rates for Steelworkers served by the Kaiser Foundation Health Plans in California), and we may do this all the more freely now since the Commission on Medical Care Plans of the American Medical Association has concurred in the opinions of others that they provide "good medical care" within the scope of services offered.[a] On this basis we have to conclude that about one-third of the hospital admissions or days and something between one-fifth and one-half of the nonobstetrical surgical cases, inpatient or ambulatory, represented excesses.

Such comparative tests suggest that, of the $125-$150 million a year being spent for the health insurance benefits of Steelworkers and their dependents, some $30-$50 million a year are being used ineffectively and wastefully. This is all the more serious because the inadequacy of available funds has been one of the main reasons for the limited scope of the insurance benefits. The main faults lie with prevalent patterns of medical organization and of insurance.

Proposals for the Future

We are acutely aware that our study has been exploratory rather than exhaustive. Nevertheless, it seems clear that the Steelworkers' officers and their convention were justified in believing that their present insurance program represents a large achievement and an important asset, and, at the same time, that it is grossly inadequate in scope and effectiveness and is unduly expensive for its limited benefits.

The declared goal of the Steelworkers Union is comprehensive care of high-quality furnished as far as feasible and desirable through group practice, and with the fullest practical group payment. To these ends, we have assisted the union in developing proposals for three new steps under their employment contracts:

1. Provision for a more comprehensive survey and evaluation of experience, preferably on a continuing basis;
2. Careful consideration of such improvements as can be effected immediately in the current insurance programs;
3. Development of a long-range program which eventually will provide full prepayment for comprehensive services of high quality, including the careful testing of alternative methods of organizing health services and prepayment in selected geographical areas suitable for pilot projects.

We have made some preliminary analyses of potentials, costs, and sources of funds.

In the current negotiations for new employment contracts with the principal employers in the steel industry, the United Steelworkers of America has requested various specific extensions in the health insurance benefits. It has also proposed that the companies and the union establish a joint committee to make studies and to develop both an immediate and a long-range program—so that in the future they may achieve comprehensive benefits, economically, and with regard for high standards of care.

At this time we do not venture to predict what will be accomplished. We hope, however, that the proposals will

[a] Report of the Commission on Medical Care Plans. J.A.M.A. (Suppl.) (Jan. 17), 1959, p. 49.

lead to improvements so that the Steelworkers and their families can look forward to a better program of health security in the steel industry.

ADDENDUM

At the time this paper was presented (October, 1959), negotiations for new employment contracts in the basic steel industry had broken down and a strike was in progress. When it was settled, the principal change in the negotiated insurance programs was a shift from contributory to noncontributory financing for the health as well as other insurance benefits. There were no changes in the scope of the health benefits under most of the contracts. There was, however, agreement between the largest basic steel companies and the Union to establish a joint Human Relations Research Committee "to plan and oversee studies and recommend solutions of mutual problems," and medical care was one of the subjects specifically listed for such action. The committee has been established, and a joint Subcommittee on Medical Care has begun to explore problems in its special field.

In September, 1960, the principal findings from the study reported in this paper were incorporated in a report to the Tenth Constitutional Convention of the United Steelworkers of America (see footnote,* page 11). A resolution adopted by that Convention reiterated the Union's goals for a more adequate health program and, as a general policy for the years ahead, proposed renewed efforts both to improve the present health insurance program—especially through joint undertakings with employers—and to develop a long-range program that will meet the declared eventual objectives.

The authors are consultants on health services, and on insurance, respectively, to the United Steel Workers of America, Pittsburgh, Pa.

This paper was presented before a Joint Session of the Group Health Association of America and the Medical Care Section of the American Public Health Association at the Eighty-Seventh Annual Meeting in Atlantic City, N. J., October 21, 1959.

1961 Crumbine Competition

All full-time local health departments in the United States are invited to submit entries in the 1961 competition for the national Samuel J. Crumbine Awards, sponsored by the Public Health Committee of the Paper Cup and Container Institute. Two awards are presented each year—one for outstanding achievement in the development of a comprehensive program of environmental health, and the other for outstanding achievement in the development of a program of public food and drink sanitation. Entries in the year's competition must be submitted on or before March 1. Further information from Crumbine Awards Jury, 250 Park Avenue, Room 1020, New York 17, N. Y.

Here is the story of a union-management health fund that joined forces with a community prepayment group practice plan. Some of the problems and their handling are discussed.

MEDICAL CARE UNDER THE TRANSIT EMPLOYEES' HEALTH AND WELFARE PLAN

Walter J. Bierwagen

THE Transit Employees Health and Welfare Fund is part of the labor agreement between O. Roy Chalk's District of Columbia Transit System, Inc., and National Capital Local Division 689 of the Amalgamated Association of Street, Electric Railway and Motor Coach Employees of America. The Fund, through a contract with Group Health Association, Inc., provides prepaid, comprehensive medical and surgical care and hospitalization to approximately 10,000 people—the employees of the transit company and their dependents. The same medical care is also provided for company pensioners, who are members of the union, and their families.

The program is new. Services under it were made available for the first time on April 1, 1959. Even in this short period of operation, there is evidence of the merit of integrating a negotiated health plan with a community health program. There is also evidence of what happens when a working man and his family are freed from the economic burden of medical care.

Before joining forces with Group Health Association, the Fund provided standard Blue Shield and Blue Cross protection to its beneficiaries, then, as now, as part of a more complete benefit program which also includes life insurance and sickness and disability insurance. To pay for the program, the company matches the contribution of its active employees. Pensioners' contributions are not matched. An active employee, with family, now pays $8.33 per month. He used to pay $6.33. Since then Blue Shield and Blue Cross rates have gone up more than 40 per cent.

Our plan started in our 1956 labor agreement which provided for the establishment of a Union Health Center. It also set aside the sum of $10,000 as a fund from which the six trustees (three appointed by management and three by labor) would pay the expenses incident to the organization of a Union Health Center.

The trustees considered three major possibilities:

1. To contract for expanded Blue Cross-Blue Shield coverage.
2. To build and operate a health center for its members alone.
3. To contract with Group Health Association for coverage.

There were available also a seemingly infinite number of variations including, for example, to eliminate coverage for pensioners, to provide benefits only for children or only for adults, to provide only diagnostic service, to provide Blue Cross hospitalization and Group Health medical care and so on.

The several possible expanded Blue

Cross-Blue Shield programs were investigated and ultimately rejected. This decision was taken because they provided limited medical coverage, and also because we were offered only so-called "open-end" agreements, in which the fee was only tentatively fixed and could be increased at any time, retroactively, and without limit.

The possibility of a Health Center for the exclusive use of Fund members was given up reluctantly, because it would have delayed further the actual medical care and because doctor recruitment loomed as a very difficult problem. Important here also was the advice we received from our friends in the Mine Workers Welfare and Retirement Fund and in the AFL-CIO's Social Security Department, to integrate our program with a community program.

The Group Health relationship presented many problems that appeared insurmountable. Group Health then had about 22,000 participants. The facilities were obviously inadequate to take care of a 50 per cent increase in membership and Group Health did not have the money to make the necessary changes in facilities. Experienced lay staff members argued forcefully that a membership of about 22,000 is the most efficient size. When directed by the GHA trustees to submit plans to expand, some of the staff suggested only a minor expansion from which, presumably, GHA could retreat without being hurt too much. Long-time members of Group Health expressed the fear that the quality of service would deteriorate because the efforts of the existing medical staff would be diluted, and newer less experienced doctors would be added. Some of the medical staff (District of Columbia practitioners), less vocal, urged the same position. In some cases medical staff members were concerned over the possibility of needing to take Maryland or Virginia Boards in order to continue with GHA, to whose aims they feel a real devotion. In summary, the feeling was that it could not be done.

We did it, "We" means everybody connected with the idea. The Central Labor Council endorsed the idea and helped locate premises for a new Medical Center in Takoma Park, Md.—a nearby suburb of Washington, D. C., and reasonably close to the geographic center of population of members of the Fund. The Fund leased, altered, and equipped those premises at a cost of approximately $275,000. Every resource at our command, and at the command of Group Health was exerted to establish the Labor Management Health Center. We had some of the best advice in the country on how to build and equip the center.

There were many differences of opinion between Group Health's trustees and the Fund's trustees. As a result, negotiations for a contract were long and tough. Group Health has over the years developed a technic of assessing so-called deterrent fees for x-rays, EKG's, basal metabolism tests and physical therapy. Charges are made for injections and for materials injected; for blood transfusions and for blood, and so on. We believe that such charges depart from the concept of prepaid medical care and impose an added financial burden during illness. Our contract provides that deterrent fees do not apply to our members. Our payment to GHA includes an amount sufficient to prepay such fees.

GHA also imposes a $3 fee for the first home call in any illness. In part, this fee is imposed as a deterrent. It also reflects the premise that the decision to make a home call must be the doctor's. Now, the Fund's trustees have no quarrel with the principle that better medical care is possible at the center than at home. We felt, however, that at least during the period while the Fund's members adjust to group practice, we needed to be able to say "the

doctor will come if you call." The Fund agreed to pay Group Health the cost of all home calls after the first. Members pay $5 for the first home call if made during the day, and $9 at night. Home calls continue to be a problem. Our members complain (and often with justification) that the GHA doctor will not come when he is called. I do not believe we have the answer to this problem yet. However, we will work it out.

There have been, and are, other problem areas. We have worked out the treatment and removal of moles and birthmarks where malignancy is feared or found. We are working on the problem of hospitalization for that broad area of "nervous breakdowns."

The contract finally worked out is initially for a two-year period. The trustees pay GHA $4.18 per beneficiary, adult or child, per month. That fee is subject to renegotiation after one year. The regular GHA fee is $4.50 per adult, and $3 for each of the first three child dependents with no charge for additional dependents.

Regular GHA members must pay $50 per family—a kind of capital investment. Fund members are not required to pay the $50 because the capital investment was made by the Fund. If other unions join GHA, their $50-per-family will be paid to the Fund until total union memberships equal 5,000 ($250,000 divided by 50). The Fund's families number approximately 3,000. As yet no additional unions have joined.

Title to the new center and the equipment is vested, at least during the first two years, in the Fund. In addition, the Fund guaranteed during the first contract period to protect GHA against undue maintenance costs at the new building. The Fund pays for maintenance, and is reimbursed by GHA to the extent of the budgeted 19 cents per beneficiary per month.

We have had some medical experience now. As the records of that experience grow in number, analysis by qualified medical men will yield much of great value. From the layman's point of view, however, it is already clear that we have made important advances. There is no doubt in my mind that we have lowered, if not completely eliminated, the economic barrier to health for about 10,000 people. As a result, these people are now forming the important habit of going to the doctor when medical care is indicated, because they are rid of the fear of being unable to pay. Additionally, our people are learning that there are medical conditions which require follow-through.

We have found, generally, that our people have in the past had necessary surgery whenever it was advised. On the other hand, we found that a man whose chest x-ray showed a shadow did not return for additional x-rays in six months as prescribed. It was too expensive. There is now carcinoma. We have encountered a child with a fractured thumb for which no medical care was sought. There was the case of the 14-year old girl with a long history of ear infection and poor hearing, with only the most haphazard treatment. She needs and is getting the necessary care to correct the damaged ear drum. We had a case with a 10-year history of diarrhea untreated. GHA examination showed premalignant polyps which had to be removed. . . . There have been gall stone and hemorrhoid cases where surgery had not been advised but was required. I could go on with many other cases, but the point is made, I believe. There is no need to belabor the benefits which flow necessarily and immediately from removing the economic barriers to good medical care.

I am a confirmed proponent of collective bargaining, of negotiation in good faith. I believe sincerely that where responsible men of good will sit down to discuss a problem, they can work out

an acceptable solution. I believe the truth of this proposition has been established beyond possible question in the arena of labor-management relations. Those who have any familiarity with the development of collective bargaining recognize that the greatest hurdle was the so-called "management prerogative," that inner area of decision which had to be reserved to management lest all enterprise immediately fail.

We subscribe to the notion that the medical care consumer has the same interest whether he is a union member or a subscriber to a co-op health plan. In protecting that interest we are prepared to meet another hurdle to good faith bargaining. I refer to the medical prerogative, more readily recognizable by the warning "this is a medical decision." When a union member is told he must be x-rayed to determine whether he has an ulcer, he will make an appointment to be x-rayed. When he objects to a three-week delay in taking x-rays, and suggests that perhaps another x-ray machine should be purchased, he will not calmly accept the statement that the decision whether his x-ray appointment is in one week or three weeks is a medical decision. I strongly recommend negotiation—put the facts on the table. We will get further faster that way.

To summarize briefly, medical care under collectively bargained health plans may be successfully integrated with community health programs, to the advantage of both. So-called deterrent fees have no place in prepaid medical care programs which truly seek to eliminate any economic barriers to good medical care. The technics of collective bargaining will help achieve better medical care. These are preliminary observations on the actual operation of a pioneering joint effort between labor and a community group.

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This paper was presented before a Joint Session of the Group Health Association of America and the Medical Care Section of the American Public Health Association at the Eighty-Seventh Annual Meeting in Atlantic City, N. J., October 21, 1959.

DISCUSSION

Agnes W. Brewster, F.A.P.H.A.

In discussing Mr. Bierwagen's paper I do so from the standpoint of the Board of Group Health Association, a consumer cooperative group practice plan. The board is elected by the membership. When running for election to the board the candidates present their "platform" of aims for Group Health. Those elected in recent years have included expansion of GHA through enrollment of union groups as one of their aims.

Yet these aspirations had not borne any fruit until this past year. After

Local 689 had decided that its members should have comprehensive medical care, three approaches were possible—to run its own union health center, to contract with GHA to supply its health center with doctors and ancillary staff or to become full-fledged participants in the consumer cooperative. As Mr. Bierwagen has told the story, full-fledged membership in GHA was achieved.

This was not easily done. Increasing our enrollment overnight by 50 per cent involved many problems. Some of the board recognized that GHA was at a cross-roads; if we could not bring Local 689 into the plan and thus continue to foster the idea of a single community plan for Washington, GHA's development would come to a halt. Union groups would affiliate with the Union Health Center in future and group enrollment would continue to elude us.

It has been said only doctors can talk to doctors. It seems to be equally true that only trade union people can talk to other trade union people. The board was fortunate in having a trade union official, Lane Kirkland, in its ranks. He acted as liaison in going beyond the area of mutual good will to mutual understanding of each side's problems.

The board continued to be unsure of its position because quite properly its first responsibility was to the existing membership, and only secondarily to the goal of a community plan.

Board opposition melted when the proposals for complete integration of the health center into GHA's operations and union membership on GHA's board were worked out. The board's conviction was that when representatives of Local 689 were sharing our problems we could all work through future negotiations in a spirit of good will without the friction that can be generated when one party is the seller and the other the buyer of the services.

The advantages to GHA's membership are numerous. Our members have a well equipped suburban center which they use proportionately more than the transit workers. The Transit Workers' members on GHA's board constantly remind the board and staff that consideration of the patients' needs is paramount. The new members are champions of adequate salary scales for doctors and staff. Our doctors have had interesting cases and in dealing with the new members, increased appreciation for the need to establish communication with the patient.

Finally, the experience we gained under this contract gives us confidence that we can participate in the new Federal Employees Health Benefits Program without endangering our existing program. GHA has an exciting future ahead, as it moves toward becoming a community plan in the fullest sense of the word.

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This paper like the two that precede it is concerned with the purchase of medical care with funds obtained through collective bargaining. The point of interest here is the role of the County Medical Society, and its cooperation with the Health Fund.

THE SAN JOAQUIN FOUNDATION FOR MEDICAL CARE

Goldie Krantz, B.A.

A SHORT description of the San Joaquin County Foundation for Medical Care should attempt first to set forth some of its prenatal problems, birth and early development, and then to evaluate its program with regard to meaning, importance, and consequences after five years of being. The reader will have to supply the nuances.

San Joaquin County physically favors variety and experimentation. Stockton, the principal city, lies in the heart of the lush Central Valley of California. It is a delta where two rivers, the San Joaquin and Sacramento, feed lands producing record yields of asparagus, tomatoes, and truck crops. Stockton's conversion from a small farming community to a port city came about because of the inland waterway which makes it possible for ocean-going freighters (as many as 500 a year) to sail up from San Francisco Bay through the reeds. Stockton is today the third largest port in California and is a gateway for valley products, among the most variegated on the West Coast.

The county's population of 200,000, which has increased by 50 per cent in the last ten years, is 70 per cent urban. Eighty per cent of the labor force is male. Eight per cent of the population is over 65 years of age. Principal employment is in small companies hiring less than 100 workers. Some 20 per cent of the population have incomes of $5,000 or over.

The 218 members of the County Medical Society set up a corporation on March 1, 1954, called the Foundation for Medical Care; it then included 92 per cent of the physicians in the county. The stated goals at that time were:[1]

> "The formulation of a basis for group prepayment which the Foundation would not only recognize, but would sponsor and endorse; the formulation of an individual and family pre-payment program which the Foundation would sponsor and endorse; and the study of methods to bring many of the desirable features of pre-payment to other groups in our population who, for various reasons, are not in a position to have group or individual pre-payment programs."

In addition to these objectives, there was the need to develop machinery through which the Medical Society could legally contract for doctors' services. The Progress Report goes on to say that:

> "The adoption of a fee schedule gives prepaid medical insurance plans a realistic criterion on which to base their policies. It should help improve the type of coverage offered in these policies and, in general, raise the standard of prepaid medical insurance contracts. A person seeking this type of insurance has, under the Foundation's plan, the certainty of coverage which he so desperately seeks."

The concept, then, was a prior fee agreement on a county-wide basis firmly

based on and reflecting prevailing medical practices in the area.

The direction of the Foundation was in the hands of a board which is the society's Board of Directors. It in turn, nominates and elects the Board of Trustees of the Foundation. The Board of Directors of the Foundation also serves as the Medical Services Committee of the Medical Society. The society approaches the Foundation as a committee function and budgets accordingly. Any licensed physician who is a member in good standing in the San Joaquin County Medical Society, or is qualified for such membership, is eligible to apply for election to participating membership in the Foundation. Admission to participating membership may be granted by the Board of Trustees to any qualified person who applies. The administrative body of nine members of the society's Board of Directors may or may not be participating members of the Foundation.

Acceptance by the physicians of this organization of medical care had to be positive. Apathy, more than opposition, was what the leadership feared—hence the doctors who participate reaffirm their membership each year by signing a contract with the Foundation. This continuous reassessment by the medical community has resulted in a 98 per cent participation by the physicians in the program in San Joaquin and the two adjacent counties, Tuolomme and Stanislaus, which are now part of this Foundation.

Practically from birth, the Foundation embarked concurrently on two kinds of programs aimed in part to meet what physicians knew best and what they feared most. They knew the California Physicians Service (CPS) and insurance company programs which were already operating in the area. Their chief quarrel with insurance company programs was that fee schedules did not reflect local medical practices, nor their cost. Consequently, they set forth their own costs by a fee schedule and went further to implement their own philosophy[2] by setting up three fee schedules related to the income level of a given group. The physicians felt that the use of insurance companies provided two advantages: (1) it gave them a so-called "sales force" since physicians theoretically are not in business to sell their services and (2) it secured their income by providing a stop-loss arrangement so that the commercial carrier took the actuarial risk. There are presently eight companies including CPS underwriting programs covering 20,000 persons.

What the physicians feared most was "closed panel" prepayment practice. It is difficult to decide whether it is the terminology or the concept which alarms them most since the Medical Society itself comprises a closed panel. Prepayment too, is certainly involved in discussions with insurance companies and consumers.

The ILWU-PMA Welfare Fund, in selecting health coverage, is guided by these principles:[3]

> "Making the best medical care available to the membership, emphasizing preventive medicine, obtaining the most comprehensive coverage possible, removing the financial barriers that keep people from seeking the medical care they need."

Indemnity programs fall hopelessly short of these goals. A coastwide fund covering various geographical areas obviously has to concern itself with whatever local resources are at hand. A medical society that cooperated in a multiphasic screening program—as this one in San Joaquin did—certainly did not seem an expendable resource. It is helpful to the purchaser of medical care to be aware of those who provide medical services and their motivations. Comprehensiveness of physicians' services, including noninsurable services, seemed to us a worthy goal and we

contracted directly with the Foundation, omitting the insurance carrier.

We worked jointly with the Medical Society to establish our own actuarial concepts and at the same time satisfied their moral need to use as a standard the average income of the men in the group. The Foundation made the payments to physicians, took the risk, and in a few instances the losses when our educated guesses on premiums were not accurate. The consumer in this instance knocked on the physician's door and so "salability" was not a problem. This consumer recognized that, notwithstanding low retentions for physicians' services, the more money available, the greater the likelihood that we could get more comprehensive care to cover such items as well-baby care, a service which is not ordinarily insurable.

An evaluation of the Foundation program without regard to quality would be sterile; in assaying medical care it is inexpiable. The mechanics of the organization, even under the insured programs in San Joaquin County underwritten with the Foundation, assured the physicians' local control.[4] In the United States 125 million people are covered by indemnity-type plans which are limited in scope and in which the bulk of the claims are handled by insurance company clerical personnel. In contrast, under the Foundation the claims are reviewed weekly by a committee of doctors.

But "quality control" can be an umbrella-like term and so I would like to use Dr. Herbert Abrams' definition of quality as a frame of reference:[5]

"Quality of medical care means the full application of scientific resources to individual persons—to prevent and cure illness, to rehabilitate, to prolong life. Quality also implies a personal interest on the part of the medical people in the patient as a person. That is why we speak of the science and art of medicine. The essence of medical care is the closing of the gap between the potentialities of science and the application of this knowledge."

Quality controls, however, apart from those existing in individual practice are just beginning to evolve in the Foundation program. The first quality controls were negatively induced. There were abuses: too many medical services, or perhaps misunderstanding of billing procedures, or inadequate diagnoses on claim forms. The homogeneity of the community lent itself to informal telephone calls by reviewing physicians to their colleagues so that very soon such diagnoses as "secondary anemia" began to disappear. The doctors now concern themselves not only with the quantity of laboratory tests, but more positively, for example, whether the attending physician has had a test for blood sugar performed on a diabetic patient.

The physicians are no longer bound by actuarial concepts that may have lost their applicability. The interest of the patient is the central theme, so that such archaic limiting practices as "only one call a day" are set aside, and the Foundation has decided in a number of instances that such arbitrary judgments may not be good medical care. Workups by internists, for instance, were considered necessary, and it was recognized that they could not be treated as an ordinary "first call." The program now provides these benefits.

San Joaquin County is 75 miles from San Francisco Bay Area, with ready access to two teaching centers, the University of California and Stanford University. Prior to the Foundation programs, continuity of care may or may not have been a consideration when referrals were made out of the area. Now, since referrals are made through the Foundation in a coordinated manner, continuity of care is assured.

Physicians' review is considered a Medical Society function and is not charged as an administrative cost to the program. The same physicians, who serve on tissue committees and hospital audit committees, have a residual ad-

vantage in being on the review committee so that they have empirical information concerning their colleagues.

Mechanics are built in so that Foundation physicians are aware of hospitalization utilization. Our own Fund experience[6] in this area is relevant. This is a gross evaluation. Comparing hospital days per case with the Kaiser Foundation Health Plan in San Francisco, our figures show 13.7 days per man in the 1957-1958 year as against 7.4 in Stockton for the same year. Kaiser days had increased 11 per cent from the previous year and the Stockton plan showed a decrease of 12.5 per cent. Office calls were 3.9 for Kaiser for the men as against 3.7 in Stockton, a 15 per cent increase in Stockton in outpatient care and a decrease of 2 per cent for Kaiser. The ILWU has another program involving 400 warehousemen and their dependents covered under an insured plan with the Foundation. For the year ending 1958, with the same benefits in both areas, the loss ratio in Stockton was 69 per cent, in San Francisco, 97 per cent. It is, therefore, easy to understand why a representative of the San Joaquin Industrial Association, himself a trustee of various health funds in the area, commented:[7] "Frankly I take civic pride in the Foundation."

Space does not permit long discussion of costs, but it is obvious that a program that provides satisfaction without pricing itself out of the labor-management fringe benefit market has thereby demonstrated a measure of quality. A longeshoreman said:[8] "I like the program because I not only get to use my regular doctor, but I also have the use of specialists, and it's still no dough out of my pocket. And I don't feel like a Ford on an assembly line."

The physicians in San Joaquin County are articulate in their satisfaction with this concept of the organization of medical care. If there is any underlying motif in their statements it is the high value they place on local control, from which flows flexibility and local planning. For instance, when a neurosurgeon moved into the community, schedules could then be revised to meet that new resource.

The zealousness of this group in talking with other medical groups is best illustrated by the fact that there are now four Foundation programs operating in 14 counties in California. In addition, there are six more county societies which have set up Foundations.[9] The programs vary as to local needs and they reflect local practices, as well as the current American economy when you note that in two counties, medical care is now tied in with Bank of America credit cards used by individual consumers.[10]

The millenium has not arrived in California insofar as the organization and provision of medical care are concerned, notwithstanding the existence of the largest prepaid group plan, Kaiser, and the Foundation plans. The reluctance of consumer groups to deal directly with physicians has not been objectively reported, but it is a fact, and it is equally true that, some physicians are reluctant to deal with these groups. Those of us trained in labor relations know we cannot negotiate the purchase of medical care with the idea that the consumer or physician gets a "fair share" of the profit dollar. Rather, the purchasing of medical care is a collaborative process with the aim of organizing prepaid medical services of high quality, which also provide preventive medicine, therapy, and rehabilitation. As consumers we think the Foundation program is a step forward within the variegated "trial and error" method of our voluntary system of prepaid medical care. As Dr. Michael Davis commented:[11] "The basic issue which modern society faces in medical and in many other fields, is not the

survival of individualism, but the maintenance of individuality within organization." And Dr. Barr's statement on quality is a relevant amen:[12] "Quality of medical care, however, cannot be achieved by organization or by quantity or variety of service. It depends chiefly and always upon the calibre and character of the participating physicians."

REFERENCES

1. Progress Report of San Joaquin County Foundation for Medical Care (Aug. 1), 1955.
2. Harrington, D. Address at Western Pension Conference. San Francisco, Calif. (Dec. 2), 1958.
3. ILWU-PMA Welfare Fund Trustees Statement in Outline of Benefits (July 1), 1951.
4. Clark, D. A. Quality of Medical Care in a National Health Program. A.J.P.H. 39:898 (July), 1949.
5. Abrams, H. K. The Changing Medical Scene. Medical Conference of ILGWU, Forest Park, Pa. (Aug.), 1958.
6. ILWU-PMA Welfare Fund Report on Utilization, 1958.
7. Barklow, R. W. Personal communication.
8. Personal communication.
9. California Medical Association, Committee on Foundations. Personal communication.
10. Credit Card Health Insurance. Business Week (June 11), 1959.
11. Davis, M. Medical Care for Tomorrow. New York: Harper's, 1955.
12. Barr, D. Principles Relating to the Success of a Medical Care Plan. Group Health Institute, Proceedings of 1959. New York City (May 25-28), 1959, p. 7.

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This paper was presented before a Joint Session of the Group Health Association of America and the Medical Care Section of the American Public Health Association at the Eighty-Seventh Annual Meeting in Atlantic City, N. J., October 21, 1959.

DISCUSSION

James R. Powell, M.D.

ON BEHALF of the San Joaquin County Medical Society I wish to congratulate Mrs. Krantz for her fine description of our favorite child, the San Joaquin Foundation for Medical Care. In 1955, when the Foundation was still in diapers, Mrs. Krantz presented to the Medical Society a program for the care of longshoremen and their dependents in the Stockton area. At that time it was revolutionary to believe that a county medical society and a powerful union such as the ILWU could cooperate on a prepaid medical program. Many were the critics who predicted and even hoped for the failure of the ILWU program. The energetic determination of Mrs. Krantz to make the ILWU program succeed was in large measure responsible for the success of that program, which success provided the stimulus for the rapid expansion of the Foundation for Medical Care.

There are three general areas of Mrs. Krantz's paper that I wish to discuss in detail. These are: (1) the multiple fee schedule of the Foundation; (2) quality control; and (3) growth of the Foundation. It is obvious that any successful prepaid medical program must

have a fee schedule actuarially supported by a premium geared to the income of the purchaser and providing for realistic compensation to the physician according to the actual prevailing costs of medical care. The Foundation accepted the premise that the cost of medical care should be a budgeted item in the family income. The Heller Report (issued by the University of California School of Public Health, 1948) and the Health Information Foundation Survey (New York, 1953) suggested that 4 per cent of family income should be budgeted for medical care. In computing premium the Foundation applied this figure. Using the 1950 census San Joaquin County, the family population and family income for the service area of the Foundation was determined. The physicians practicing in the San Joaquin area were surveyed as to the actual cost of professional services. From the survey a fee schedule was derived. The composite data of a professional fee schedule, family population and income, and the budget factor of 4 per cent were then presented to insurance actuaries, both commercial and California Physicians Service. It soon became apparent that the 4 per cent of the family income of a great many families in the San Joaquin area could not provide sufficient premium to purchase medical care at prevailing costs as determined by the survey of costs of actual professional services. Consequently, a multiple fee schedule was devised. For the present, the Foundation believes that a family income of less than $2,500 cannot provide funds for private medical care. These families, the Foundation feels, are the responsibility of society and hence should receive their medical care through the county hospital system. Four per cent of family income between $2,500 and $3,500 can provide a premium that will purchase 50 per cent of the professional fee schedule —Schedule I. Four per cent of family income between $3,500 and $4,500 will purchase 75 per cent of the professional fee schedule—Schedule II. Four per cent of family income above $4,500 will purchase 100 per cent of the professional fee schedule—Schedule III. The Foundation, therefore, adopted the principle that a multiple fee schedule was necessary and practical, and the Foundation further bound its participating members to accept as full payment for all services rendered the fee schedule applicable to that particular family income. The details on the processing of these data are provided in the Progress Report of the San Joaquin County Foundation for Medical Care (August 1, 1955). Civic pride compels me to state that in 1954, the medium family income in San Joaquin County was $3,300 a year. In 1959, according to private research, the median income was $4,700 a year. The professional fee schedule originally derived in 1954 has now been supplanted by the California Medical Association's Relative Value Study applying units 5.

Today two words have become commonplace in referring to a product, whether material or service, namely quality control. In my opinion, of equal importance with the financial concepts of the Foundation is the procedure of quality control. Quality control as exercised by the Foundation actually falls into four major categories.

First, there is the necessity to make certain that any prepaid medical program offered the consumer contains minimum standards to assure both the consumer and the physician that the program purchased provides worthwhile medical protection. Consequently, the Foundation has an imposing list of minimum requirements that all programs must satisfy before they can receive Foundation sponsorship. To mention just a few of these requirements—total surgical coverage, coverage for assistant surgeon, diagnostic

work-up by physician including internist, house and office calls, well-baby care, coverage for dependent children to start at birth rather than fourteenth day of life, and the right of consultation for any given system. The full list of minimum standards for Foundation sponsored programs is available under date of June 3, 1959, San Joaquin Foundation for Medical Care.

The second major area of quality control is the responsibility of medicine to police itself to insure, in so far as it is possible, that each patient is receiving the best medical care available and that no participating physician member is using a prepaid medical program for his own peculiar financial advantage. A word about the professional membership in the Foundation may emphasize this facet of quality control. Each licensed physician and surgeon in the San Joaquin area is eligible to apply for participating membership in the Foundation. This application is scrutinized by a credentials and membership committee and if the applicant is found acceptable he is granted participating membership for one calendar year. At the end of the calendar year each participating member must reapply for membership in the Foundation. In this way, any physician who for one reason or another does not behave in the highest ethical and medical manner in the provision of his services under the auspices of a Foundation program can be dropped from membership in the Foundation by the simple expedient of not being reelected to participating membership. I regret to say that three doctors have been denied reelection to participating membership. Grievous as this may be to the medical profession such action has demonstrated to the citizens at large that physicians can and will police themselves. To date approximately 98 per cent of the practicing physicians in the San Joaquin area are members of the Foundation. There is only one doctor of any medical or social standing in our community who is not a participating member.

But there must be some continuity to the Foundation organization and this is supplied by the Board of Directors of the San Joaquin County Medical Society who serve as administrative members of the Foundation for a period of three years or as long as they remain members of the Board of Directors of the Medical Society. The administrative members in turn elect a Board of Trustees of the Foundation, which is charged with the day to day administration and guidance of the Foundation. However, I hasten to add that even though a doctor may be an administrator of the Foundation, either in his capacity as a member of the Board of Directors of the Medical Society, or as a member of the Board of Trustees of the Foundation, if he also wishes to be a participating member of the Foundation and practice medicine under the benefits of a Foundation sponsored program, he must submit his application for participating membership each calendar year in the same fashion as any other physician.

There is the administrative and medical audit phase of quality control. Each claim for services rendered under a Foundation sponsored program is forwarded by the attending physician to the Foundation office. There the claim is checked for contractual accuracy by our lay claims personnel. Each claim is then forwarded weekly to a medical review and audit done by a committee of participating members of the Foundation. In this committee the actual quality of medical care administered is critically analyzed as to its medical and financial components. I assure you that any discrepancies are immediately and vigorously investigated and the attending physician is invited to meet with the

committee and explain his course of action. Such an interview with the medical review committee has a most salutary effect upon the attending physician.

There is the financial area of quality control. The Foundation has asked for and received draft authority from the underwriters to pay the actual claim against the underwriters bank credit. The Foundation feels that local physicians are the best qualified to judge medical claims in their area and should have the responsibility for deciding other than routine contractual medical expenses. I am pleased to report that this draft authority has proved itself to be a financial credit as far as the underwriters are concerned.

The foundation concept has experienced tremendous growth in the past five years. Now in the state of California there are four functioning Foundations for Medical Care covering 14 counties. Six other foundations have been approved by the constituent county medical society and await the completion of organizational details before commencing actual operations. The neighboring state of Oregon is in the process of establishing a foundation in the city of Portland. County societies in many other states, particularly Indiana and New York, have also expressed interest in the foundation program. I reemphasize that there are ten underwriters, including California Physicians' Service, who have programs covering 41 different groups with a total population of 20,000 plus. Of these 41 different groups, 25 fall into Schedule III, private practice rates. Thirteen are in Schedule II, 75 per cent of private practice rates. Eight of these 41 programs are union groups, three falling in Schedule II and five in Schedule III. Employer groups, civil employees and miscellaneous employer associations comprise, for the main, the remaining 33 groups.

The reasons for the acceptance of the foundation concept are many. These are the salient ones. The cost of medical care is predictible for any consumer group. The premium is budgeted to family income; the cost of professional services is related to the actual cost of those services. There is local control by both the consumer and the physician. Should any question arise it can be settled either by a telephone call or a face to face meeting within a matter of minutes.

My medical heritage as a private practitioner compels me to make one comment on the issue of "closed panel" discussed in the paper. We have solved that knotty problem in the Foundation by establishing an "open-ended closed panel."

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An analysis of medical care from the viewpoint of an economist necessarily emphasizes concepts and aspects other than those familiar to physicians, nurses, and other health workers. These are of considerable importance in dealing with medical care problems, and their relevance is discussed in this paper.

ECONOMIC ANALYSIS OF MEDICAL CARE IN THE UNITED STATES

SOME SIGNIFICANT CONCEPTS AND ASPECTS

Charlotte Muller, Ph.D.

THE economic analysis of medical care in the United States starts with an examination of the basic concept of the Gross National Product (GNP) and the flow of money income into medical care expenditures because, from the point of view of the whole economy, the field of medical and hospital care is part of an over-all system and process. The source of income for all consumption purposes, including health, is the use of resources by the productive system of the whole country, that is, the members of the labor force (some 64 million people in 1958) and the land, buildings, machines, and materials which are combined with labor to produce the total goods and services of the whole economy. This total was valued in 1958 at $442 billions[1] as a result of estimates based on the many markets on which these goods and services were sold. The following is the way the Gross National Product divides up: (1) Durable goods constituted 20.8 per cent of the Gross National Product in a recent year (1957).[2] Personal consumption of durable goods (e.g., automobiles and television sets) amounted to 9 per cent, producers' equipment amounted to 6 per cent, government purchases of durable goods to 4 per cent, and other items, particularly exports, to 1 per cent. (2) Nondurable goods (for example, clothing and food) amounted to 32.5 per cent. Of this, personal consumption took 31 per cent and government purchases took 1 per cent. (3) Services amounted to 35.2 per cent, of which personal services were 24 per cent—including laundry, recreation, hotels, medical care, automotive repairs, and other intangible items bought by consumers—and government purchases of services amounted to 11 per cent.

Finally, construction amounted to 11.5 per cent of GNP: private construction makes up 8 per cent and government's share is 3 per cent. The relative importance of services in our economy is shown by the fact that over one-third of GNP goes into all services. If the relative shares of government in durable and nondurable goods, services, and construction are summed up, the share of government in the Gross

National Product amounts to about one-fifth of the total sum of over $440 billions. In the health field the government share of the total is about one-fourth, a little more than in the economy as a whole. However, the importance of government in the economy is not completely stated by the percentage of product. Any item which is especially predictable or stable may underpin the whole economy over a period of time; moreover, the government has regulatory and other relationships with the economy besides its purchase of part of the product.

The service sector as a share of the total was about 13 per cent larger than ten years earlier. In 1947, services were about 31 per cent of GNP; in 1957, the service sector took 35 per cent. However, this is not necessarily to be interpreted as a trend, because in 1929, also, services had amounted to 35 per cent of total product. Coming after World War II, 1947 was an abnormally low year for services in that people were replenishing stocks of both personal and industry durable goods, with the result that the goods sector was abnormally high.

How is such a figure as the $442 billions or any similar total value of output arrived at?—not in a statistical sense, but how does output happen to be at that level for a given year? The general principle is that the level of production of an industrial nation varies with three important factors. The first factor is the amount of available resources as influenced by immigration, births, addition of new territory, discovery of new resources which had never been charted, and additions to capital goods from the previous year's production, which now become a resource to use in the current year. All these are aspects of the amount of labor, capital, and land which the country has to work with. A second factor which would affect the volume of output is the method of using the available resources, that is, technology and organizational structure. (In hospital and medical administration, as elsewhere, changes in the method of resource use could strongly influence the efficiency or productivity of a given plant or labor force. In fact one of the arts of administration relates to increasing the ratio between resource input and product output.)

A third important factor in the level of production is the per cent of resources actually in use at a given time. If a country is rich in resources, with highly developed technology, but a large part of its resources are unemployed, the actual level of production is below the potential level. The per cent of resources used is easily, though roughly, measured by the per cent of the labor force that is unemployed, because factories and land will be idle if the labor which normally works with them is idle. In 1958, to take an example which was not considered a good year for the whole economy, unemployment stood at 6.8 per cent of the labor force as measured by official agencies. Certainly more resources would have been available for health purposes if there had been additional employment occupying close to 100 per cent of the labor force in that year. This is an important way in which the health services are influenced by over-all economic policy and, indeed, by economic circumstance resulting from lack of policy.

Not all of the $442 billions of GNP is available for current use by consumers or others. First of all, something must be set aside to replace the goods which were used up in production. A simple example is bales of cotton. As cotton which existed at the beginning of the year was used up to make clothes which were counted as production, therefore, in computing the total value of the year's production, a certain sum

of dollars must be deducted representing the value of real goods (bales) set aside to replace bales used up to make the clothes. Or if machines are worn out in the process of production, some of the output of the machinery industry must be set aside for the purpose of replacement. Examples of capital consumption can be found in the health services. For instance, the life of an x-ray machine can be expressed in terms of how many exposures it will take; one can figure out how many exposures were made in the year, and what is the proper amount which should be allocated for replacement purposes. Capital consumption amounted to about $38 billions in 1958, leaving a net of $404 billions available for all uses. To simplify matters, one can think of the bulk of the sum representing GNP as being in the hands of private businesses. From gross sales receipts they have taken out a capital replacement allowance. What happens to the rest? Some goes di[illegible] government as business taxes; [illegible]nted to $38 billions. Some go[illegible] to the v[illegible]ous social insurance funds (old a[illegible]rvivors' and disability; unemplo[illegible]ment; temporary disability, and so forth), these were in the order of $15 billions. Some is retained by business as undistributed profits. This is a substantial amount, much of which may reappear in the income stream as spending on capital construction.

The rest of gross sales goes to consumers as personal income. This amount, $359 billions, is about four-fifths of the Gross National Product, and amounted to over $2,000 per capita for the United States. The Commonwealth of Puerto Rico, which is relatively wealthy compared to less industrialized areas and has experienced a very great increase in per capita income, has recently attained an income of over $400 per capita, which is one-fifth the level of continental United States; some other countries have $200 and $300.

What sources are represented by this personal income figure? The wages and salaries component—income from employment—is by far the largest. The receipt of such income depends on a happy connection with the labor market in the current production period. Therefore, it is affected by sickness and the condition of the labor market—factors which do not impair the stability of property income. Supplements to wage and salary income are also a substantial sum. These arrive in the form of workmen's compensation payments, industrial pensions, and other fringe benefits. The other important group of private sources of income comprises dividends, rents, interest and business profits, and "proprietors' income" (e.g., income of a farm owner or a physician in solo practice). All these forms of property income have one thing in common: the right to receive such income depends on the fact that the property was used in some part of the productive system in the past year.

Finally, there is one other important source of personal income, and that is the other side of the coin with respect to the Social Insurance contributions which go out of the Gross National Product in a given year. This other source is "transfer payments" from government such as Social Security payments for retirement or disability, and veterans' benefits. This phrase is used to describe the fact that government acts as the intermediary between the person or firm paying in contributions or taxes, and those legally entitled to the receipt of benefits or assistance. In contrast, when government engages in buying things from the market or in setting up its own facilities for producing a good or service, it is taking a more active part in relation to productive resources. A transfer payment simply transfers income through a legal

device from one part of the economy to another. In this sense nobody "pays for" his own future security, but the whole economy in the current year pays for the support of the retired or other unable-to-work groups in the current year. Government transfer payments amounted to $24 billions in 1958.

Personal taxes, amounting to about $43 billions, must be subtracted from personal income before arriving at the amount of income which is "at the disposal" of consumers. The result of this subtraction is disposable personal income of about $317 billions. Not all of this sum is used for personal consumption. Some gets saved in the various forms which are available to consumers—deposits in banks and savings and loan institutions, investment activities including purchase of securities, and personal contributions to insurance are all forms of savings. The subtraction of $24 billions of savings leaves about $293 billions, which is the amount of consumer spending on all goods and services. Of the original GNP, less than three-quarters was available for and went into consumer spending. The amount available for this purpose depends on several factors: the size of the total product, whether capital consumption was adequate for full replacement (since in wartime replacement is deferred to meet emergency demands for product), the decisions of business to keep or pay out earnings, and so forth. Once income is received, tax policy, attitudes toward savings, price movements, and other socioeconomic factors will affect what consumers actually decide to spend.

The economic round of spending and income creation is repeated by the actions of government, business, and consumers. The government picks up from business taxes and personal taxes, plus its own borrowing, money to pay over to that portion of the economy which it supports as purchaser. Business uses its undistributed profits and receipts from consumer spending to finance hiring of labor and purchase of raw materials, and so on for the next year. Consumer spending, by flowing back into the economy, along with the part put back by business and government, will generate the Gross National Product for the next year or the next income period. (This period can be very short if one is interested in month-to-month changes in the money flow.) Spending generates income and income then generates new spending. The amounts of the various parts of the stream are variable depending on conditions affecting business outlook, national economic policy, and other factors. (Some factors behind consumer decisions in the health field are examined. See pages 40 and 41.)

In the previous statement, three kinds of economic units are cited—the household, the firm, and government.* Each of these units has its receipts from the previous income period as a source of future spending; it also has access to credit facilities.† Whichever type of economic unit is the borrower, increased

* Formerly little notice was taken of nonprofit organizations in national income analysis. They are not firms, because the basic definition of the firm is the profit reason for being in business. Nor are they truly households. Current practice of the Federal Reserve System in the analysis of money flows is to designate "consumer and nonprofit sector" as one of the domestic sectors of the economy.

† Every big boom in American history has seen very large borrowing by firms, because plans and expectations were far beyond expectations in the past, this being an essential characteristic of the boom. Government has also resorted to borrowing on a big scale over a long historical period, e.g., at times of war. The economy is stimulated by borrowing when it is not limited to taking funds from another income receiver, but involves creation of new credit. This comes about when banks set up a new deposit by extending a loan only a fraction of which is represented by existing reserves. Only since World War II has the household become a major borrower for long-term durable goods, but this has become an important factor in the economy.

credit gives rise to a larger volume of production, and reduced credit results in smaller production.*

Medical Care Expenditure Out of Consumer Income

Official figures on consumer income include income of families and unattached individuals, called consumer units. So far as possible the value of farm products consumed on the farm is included but, otherwise, the figures refer to cash (See Table 1).

What do these figures show? In 1958, 61 per cent of the nation's households were below the $6,000 mark. This is an important figure to keep in mind in selecting a logical premium for health insurance. Fourteen per cent were in the very lowest bracket—under $2,000. What can such people afford in the way of contribution toward their own medical care? What can they afford in terms of charitable contributions? A picture of tax resources at the extreme brackets is shown by the income distribution in that 14 per cent of families, the lowest income class, have 3 per cent of total income; 5 per cent of families, the highest income class, have 19 per cent of income.[3] The income group below $4,000 (representing 36 per cent of consumer units) has what practically all measures consider less than an adequate income for family maintenance.[4] These figures refer to income before taxes, but income after taxes shows a similar general distribution.

Average family income has improved even after discounting for cost of living changes (i.e., dividing income by the Consumer Price Index—see the following). The improvement has been in the order of 18 per cent in an 11 year period or 1¾ per cent annually 1947-1958.

Where do medical care expenditures fit into the over-all income and spend-

* Banks are restricted by laws to lending only up to a certain per cent of their reserves. But favorable government policy can cause these reserves to expand through the Federal Reserve System. Household borrowing is affected by whether credit terms are liberal or rigid. In the declining period of a business cycle, credit terms tend to be more stringent even without central government control, because banks look over new risks more carefully. One sees this reflected in statistics of debt repayment, which tend to rise; new debt tends to slack off. Government, in contrast to other borrowers, has virtually unlimited power to create new credit through its control of the Federal Reserve System.

Table 1—Distribution of Consumer Units and Their Income by Family Income Level, 1958

Income Class Before Taxes	Families and Unattached Individuals (millions)	Per cent Distribution	Aggregate Family Personal Income (billions of dollars)	Per cent Distribution
Under $2,000	7.6	14	8.5	3
$ 2,000-$ 3,999	12.1	22	37.1	11
$ 4,000-$ 5,999	13.6	25	67.4	20
$ 6,000-$ 7,999	9.2	17	63.9	19
$ 8,000-$ 9,999	5.0	9	44.2	13
$10,000-$14,999	4.3	8	51.9	15
$15,000 and over	2.5	5	65.0	19
Total	54.3	100	338.0	100

Source: Survey of Current Business (Apr.), 1959, p. 11.

ing picture? Seen from the national economic perspective, private expenditures on medical care are a small part of disposable income, but they are important qualitatively for a number of reasons. The actual amount in 1957 was over $15 billions. (Another $5 billions was spent by government.) According to the Social Security Bulletin,[5] in the period 1948-1957, private expenditures on medical care as a per cent of disposable income went up from 4.0 per cent to 4.9 per cent, representing, in 1957, $88 per capita. For a family of four that would mean $352 in a single year. This is the best reflection of the value which consumers in the aggregate have placed on spending for medical care, that is, related to disposable income rather than to the Gross National Product or income before taxes. The amount spent increased over 100 per cent in the ten-year period. What lies behind the fact that consumer expenditure on medical care increased from about $7 billions to about $15 billion in a decade? Does this represent health consciousness?

First of all, a few adjustments must be made. The population increased 16 per cent; therefore a good part of the increase simply represented more people receiving health services. Another big factor is the increase in medical care prices, which, over that period, according to the Consumer Price Index (CPI), went up about 37 per cent. There are reasons for thinking that this is a modest estimate of the actual increase in medical care cost. There was a substantive increase in real per capita medical care service received, but the dollar amount went up considerably more because of changes in population and changes in price.

The major items in the 1957 bill were —hospitals, 29 per cent; physicians, 27 per cent; and medicines and appliances, 26 per cent. Insurance accounted for over half of the expenditures for hospital and about 30 per cent of the expenditures for physicians' care—in all, about a quarter of the total $15 billions was paid out by carriers of insurance on behalf of subscribers, rather than out of pocket. Premiums for hospital insurance are included with "hospital"; similarly, premiums for insurance against physicians' bills are allocated to "physicians." Hospitals were also largest in the government share of medical care expenditures. The cost of insurance was $670 millions. This item, called the expense of insurance, is the amount retained by the providers of insurance, not the providers of service. This cost is equal to about 20 per cent of the amount of benefits paid out by insurance, which is a very high overlay. Another way of appreciating the expense of insurance is to recognize that it is equal to four times the nursing home bill and one-third the dental bill. Clearly, here is a problem for attack. How is it possible to get insurance benefits to people without this kind of relative cost? Nonprofit insurers supply about a little less than half of the total coverage; their average retention is somewhat less than the commercial insurers. Commercial group policies, because of competition from Blue Cross, and so forth, have improved their ratio between benefits and premiums. The relative importance of insurance is greatest in the hospital field. It plays some role in the medical field and very little in other expenditures.

The hospital bill is of looming importance in medical care expenditures for several reasons. The price of hospital care has been rising, as measured by the Bureau of Labor Statistics hospital cost index, a component of the medical care cost index. One reason for this development is the rising cost of providing service of any given quality due to the general inflationary tendency of our economy. Costs of food, labor, and industrial products

entering into hospital operations have all gone up. Smaller hospitals as purchasers of large items of equipment have limited bargaining power, compared to industrial purchasers. A second reason why the hospital bill has expanded is that care has become more complex; the product itself has changed. Still another reason is that more hospital days are being "consumed" by the American public, owing partly to wider public acceptance of hospitals, partly to the increased number of aged persons. In addition, the insurance which has been developed in the United States has tended to make access to hospitals more available than access to other forms of care. Increased population itself has another path of influence beyond the average expectancy of hospital use in any given population. The actual births have been taking place as a general rule in hospitals. Hospital admissions went up 52 per cent between 1946 and 1956, with the length of stay declining only 17 per cent in that period.

From 1948 to 1957, the hospital share in total expenditure rose from 24.4 per cent to 29.2 per cent while the physicians' share fell from 31.8 per cent to 27.1 per cent. The hospital percentage share is overstated to the extent that increases in physicians' receipts are reported. If the latter were fully reported, one may conjecture that the hospital share would not look quite so big in comparison. It is thought by some observers that the under-reporting of professional income to minimize tax liability is insufficiently subject to administrative control by the Internal Revenue Service, or is encouraged by legislative provisions, and is a bigger problem in times of greater prosperity.[6] While this is a problem of all professions where there are opportunities for gain outside of administrative control, it has a particular implication when insurance programs are in effect which count on a physician accepting a particular fee. If he accepts a larger fee or asks for a larger fee than he is technically committed to do, he would have a reason not to report it in full. In the Health Information Foundation study of consumer expenditures in 1953, the amounts which householders said they paid doctors were bigger than the amounts which doctors reported to the government. If one knew where the true amount lies, then obviously under-reporting would not exist, because doctors' receipts would be fully reported somewhere. Thus there is reason to believe that the share of physicians may not have declined by as much as the printed figure would imply.

To arrive at total per capita outlay from private and public sources combined, the figure of $88 per capita for private outlay should be increased by about $29 for the $5 billions of government expenditures also put on a per capita basis. About $115 to $117 as a total per capita outlay is found when those two are combined. This total makes a more valid basis for comparisons with other countries having different proportions of government to private expenditure. The sum of $20 billions reflecting both private and government can be put over a denominator of the GNP to give a figure of something like 4½ per cent of the Gross National Product going into all health purposes. This is not too far off from the proportion allocated by individuals from personal income, but again is a more useful index for international comparison, because a GNP figure is easier to obtain for different countries than other measures.

A very substantial increase has occurred in the per cent of the Gross National Product which this country is putting into health services. This can be stated as a long-term rising relative demand for health services, at least over the decade 1948-1957.

The Measurement of Medical Care Prices and Some Other Factors Relating to Consumer Expenditures

Some of the fundamentals of the measurement of medical care prices are of interest because the index of consumer prices is very widely quoted. The Consumer Price Index is a series published by the United States Bureau of Labor Statistics (BLS), in the Department of Health, Education, and Welfare. It attempts to price all important items bought by city families of wage earners and clerical workers. It prices 300 different items in the family budget, as checked by periodic studies of household expenditure. Reports from the different cities are weighted by the relative population of the cities. The medical care index has been priced since 1918. At the present time, the 1947-1949 average of prices is considered as 100 per cent and the index for any current year is expressed on this base. Since the inception of the CPI, the base has been changed on occasion to a more recent period in order to be more meaningful. For the same reasons, from time to time additional services have been added to the index. For example, in 1939, specialists' fees, private and semiprivate rooms in hospitals, and private nurses' rates were added. However, during economy waves there have also been some subtractions, so that one cannot point to a steady upward trend in the complexity and realism of the index. Physicians' fees are priced by an annual visit to certain reporting physicians, supplemented by telephone calls. Four prices are collected for any hospital or drug item for each city which is included in the index, but for physicians the general rule up to 1958 was to collect six prices (see the following). The spread of health insurance in the population was recognized in 1950 when group hospital insurance premiums were added to the index as an item to be priced.

Among the problems in constructing, using and interpreting a medical care price index is that of change in the composition of items which are included. An example is specialists' care. Three kinds of services are selected to represent all kinds of specialists' care: appendectomy, tonsillectomy, and obstetrical care, including a Wassermann test if it is provided. Tonsillectomy includes removal of adenoids if possible. These surgical procedures stand for all surgery, and surgery stands for all the specialties. This would be acceptable if the frequency of these procedures relative to total specialists' care were stable and if price movements were parallel. With changes in patterns of utilization such a weighting and composition system as this needs to be reviewed, particularly if more use is being made of new, complex operations coming into the market, perhaps, at a relatively high price. One may then find an unreported increase in the price of specialists' care. There is also a more general problem of whether the proportion of weighting given to physicians' services within the total medical care index is proper.

For drugs, also, the proportion between prices on the actual market may be imperfectly reflected in an index. Certain preparations, e.g., penicillin, aspirin, multivitamins, and a liquid narcotic, are priced to represent all drugs. If a new antibiotic is introduced, which is considerably more expensive or out of proportion to the older medications, the drug index nevertheless continues to reflect the low price of these older drugs. But more consumer expenditure is going into the high-priced item; thus there has been a change—which may or may not be temporary—in the relative value of the items included. In hospital care, the question has been raised whether room rates (included in the index) have

stayed steadier than ancillary services (not in the index). Hospital administrators, it has been suggested, may be more likely to increase the charge for x-ray, oxygen, and other items to avoid the adverse reaction expected to follow a rise in basic room rates. This possibility would need to be tested against reality to see whether room rates properly represent the total patient bill. (The BLS is now planning to add ancillary services.)

Another problem relates to type of practice and the type of consumption pattern priced in the index. Insured practice has been totally excluded, but the fee structure may not be the same as for uninsured practice. Although revisions of the index will, no doubt, in time take this into account, they have not yet done so. Another problem concerned with the type of practice is that suburbs are under-represented in the pricing method for physicians' care. Not only has there been a relative move of population into suburban areas, but many new suburban families are rising-income families, including young children and women in the child-bearing ages, who for biological reasons would be large consumers of medical services. Their relative price structure may be higher than in the older residential areas where certain regular price reporters provide the quotations to the BLS. Another problem is that outside of the 46 cities covered, the price structure may not stay in a relative proportion to the situation in the cities which are priced, and the local applicability of the index has to be determined. Finally, if the agreement in a contract to accept a certain insurance allowance as total payment for patients below a certain income level is not being strictly adhered to, there would be a tendency for this not to show up in the reporting, as this physician has signed a contract with legal status to provide care to these patients at a certain price. Thus any violations that may exist in fact would result in inaccuracy in the index.

In short, a regular review of anything so important as this index is needed to reflect the utilization pattern of the given period, the changes in household expenditures, and the shift that is going on—a partial shift—to insured practice. The BLS has recently announced plans to attack some of these problems.

"Additional work required to improve the medical care component will be pushed vigorously. Among the large cities for which separate indexes are published, the number of quotations for appendectomies, tonsillectomies, and obstetrical care will be increased substantially. The Bureau expects to add several new specifications for drugs and medicines to the pricing list and to expand hospital pricing to include the more important ancillary services not now priced. During the past year, the sample of physicians from whom rates from home and office visits are collected was expanded from about 6 to approximately 18 per city in 19 of the 20 large cities and surgical insurance was added to the index."[7]

Some Other Questions in the General Area of Consumer Expenditure

One useful conceptual device is a scale of medical solvency. The population can be divided into classes, depending on ability to meet medical needs out of personal income. The highest on the scale are those who have liquid assets available for medical needs—cash, bank deposits, or easily negotiable securities. Below this level are people who have assets which are not liquid, such as a house, car, or business. There are two subdivisions in this group: (1) those with such assets that their standard of living would be affected if they were forced to liquidate or pledge them; (2) those whose standard of living would not be affected. In other words, if they have to sell their house and move out of the neighborhood or do without a car in order to pay a doctor's bill, a much more drastic change is demanded than if they had two or three cars or had income-producing property. A still less

advantaged category would be those with scant assets but with current income sufficient to carry a medical debt, such as installment payments on a hospital bill. When income is inadequate for this purpose but sufficient for such needs as food, clothing, and shelter, the term "medically indigent" is applicable. Relatives and welfare agencies help meet the needs of this group. Finally, the least fortunate group comprises those whose current income is not adequate for total basic living needs even without a medical care bill, the "indigent" group who must turn to welfare for subsistence.

A few comments may make this scale of medical solvency more meaningful. The possession of insurance is equivalent to holding of assets, the value of the imputed assets being equal to the maximum underwritten benefit multiplied by the probability of its being used. The growth of insurance has in effect placed the insured population in a higher position on the scale of medical solvency and reduced the need to hold liquid assets specifically for such events. At the same time, the population has been increasing its holdings of assets such as houses and automobiles, but the concomitant growth of consumer debt to finance such purchases impairs the freedom of the owner to pledge the assets in time of medical need. The trends, the use of insurance and the holding of somewhat mortgaged assets, have been conflicting in their effect on medical solvency, but the insurance trend appears to be dominant. The special situation of the aged must also be pointed out as regards medical solvency. Their assets may be rather large but their low current income requires them to draw on their assets for total needs, with an uncertain time horizon before them.

Factors Behind Consumer Expenditure on Medical Care

Various studies have pointed to differences in medical care spending associated with age, sex, region of residence and size of community, income class, and other factors. Such differences reduce to combinations of five basic determinants, namely, need, economic capacity, opportunity, attitudes, and information. Needed care has been defined in the current National Health Survey as the care which would be purchased if a person had economic and geographical access to care and knowledge of what was professionally considered desirable.[8]

Using this set of components, one can comment on some of the important situations where one finds variations in the amount of medical care expenditure. In regard to family size, for example, with more children, expenditure goes up—but only if income is above the adequacy level. Below that level, as the number of children goes up, the family is obliged to spend so much on food that medical expenditure declines.

The aged represent another combination of the basic elements. Their income is low, but their need is in general so great that their expenditures are higher per capita than those of the rest of the population. Their consumption of dentistry is less since many have lost their teeth; their consumption of surgery is on the low side. This is partly the result of being poorer surgical risks, partly the effect of attitude. Both may be "cohort" phenomena whose importance will change as new crops of young people with better health and more accepting attitudes reach the age of 65.

Another interesting situation is presented by changes in social class, a factor of concern in a society with rapid upward mobility of occupation and class. Medical care attitudes may lag until new values are absorbed from new associates and neighborhoods, particularly as regards preventive care, psychiatry, and newer specialties. A countervailing influence is found in those with high expectations of future status and income

but currently in the low income status of students, apprentice-level jobs, and the like, whose spending may be greater than their temporary income position would suggest.

The effect of the price of medical care on spending is complex. At the time of a medical emergency, the consumer is unable and unwilling to reduce his consumption even if the price seems high, but he may take action later. Historically, one type of action of particular interest produced by scarcity and expensiveness of medical care has been the creation of better sources of supply, organization of consumer group plans, and the like. The legal regulation of fees has been another type of reaction.*

Tax deductibility of medical care expense can be expected to have several influences on spending. The fact that the employer's contribution for health insurance for employees and their dependents is not taxable as personal income of the employee has given impetus to the development of such programs. The deductibility of a percentage outlay by the individual from taxable income has two possible effects although they have not been precisely measured. One is the income effect—any released income is available for all forms of spending including medical. The other is the announcement effect—the knowledge of the provision in the tax law would make people more (theoretically) disposed to make tax-forgivable expenditures.

Behind the current pattern of consumption outlays for health services lies, finally, the significant influence of alternative sources for meeting needs, particularly through use of free services of government. Attitudes toward government vary with the national culture and the specific socioeconomic background of the individual. The means test poses a formidable barrier in the minds of the many who reject the social label of indigency. In a price-conscious culture such as ours, one finds many who are suspicious of the quality or worth of the cheap or free good, and may in fact find experiences to reinforce these doubts. Persons coming from lands where acceptance of government care does not carry a stigma and where a free good is still "good" may be influenced by their background. If the burden of illness is potentially very great or overwhelming, attitudes toward free care will be more accepting, particularly if, as in Veterans Administration practice in the past, the means test is superficial.

Changes in Health Services

Our present era is one of considerable change in the method of organizing and producing health services. Group medical practice as well as industrial and government employment of physicians have partly replaced solo practice. Traditional relations between physician and patient have been further modified by third-party payments and fee schedules. Public and private elements have adopted a "coexistence" policy: the government in effect subsidizes the voluntary system through its tax allowances for philanthropic donations, employer contributions to health insurance, and personal medical expense including premiums. The government has underwritten (not necessarily by sufficient appropriations) the care of the indigent in the voluntary general hospital and the private nursing home, and has moved into payment for the medically

* In Virginia in 1646, an act was passed providing that because of the "immoderate and excessive rates and prices exacted by practitioners in Physick and chyrurgery" a person may bring under arrest the offending physician who must swear to the "true value, worth and quantity of his druggs and medicines." The court would then determine the proper fee. The law was modified in 1661 to include the value of "care, visits and attendance." A definite fee schedule was set up in 1736. (M. B. Gordon, Aesculapius Comes to the Colonies. Ventnor, N. J., 1949, pp. 32-34.)

indigent as well. Medical care benefits are found in certain parts of the Social Security system, such as workmen's compensation and disability benefits, and are being debated in connection with the aged. A trend toward the study, investigation, and regulation of voluntary insurance is under way in several states. The status of hospital personnel is undergoing a long-run socioeconomic change, marked by the substitution of money wages for prerequisites, increase in fringe benefits, shortening of hours, and a drive toward unionization. Attempts have recently been made to include hospital workers in unemployment insurance.

The significance of medical care in a changing standard of living has several aspects. Medical care itself is a good reflection of improvements in the pattern of consumption. What the public expects in medical and hospital care is a composite of persistent and powerful changes in the underlying natural sciences and related technics, of the higher demands for comfort and personal social status identified with receipt of modern medical attention, and of improved knowledge of what is available and what is effective. In short, the demand for modern medical care is a reflection of desire to make real to the individual the potentialities of our economy to provide more than bare subsistence.

At the same time, medical care is recognized as a safeguard to productivity in its capacity to prevent or shorten costly spells of disability. An advanced economy with high value attached to each labor hour is particularly dependent on this protection. Finally (in terms of flow of income and creation of employment) a nation rich in physical assets may benefit—indeed, be dependent upon—a steady demand for services of all kind. In this respect the purchase of medical care, especially through predictable periodic payments, has and will continue to have significance for employment and consumption levels in the whole economy.

REFERENCES

1. Federal Reserve Bull. (Nov.). 1959, p. 1415.
2. U. S. Income and Output. Washington, D. C.: U. S. Department of Commerce (Nov.), 1958, p. 12.
3. Survey of Current Business (Apr.), 1959, p. 11.
4. Minimum Earnings Necessary for a Decent Standard of Living. AFL-CIO Collective Bargaining Rep. 3.6 (June), 1958.
5. Brewster, Agnes W. Voluntary Health Insurance and Medical Care Expenditures: A Ten-Year Review. Social Security Bull. (Dec.), 1958.
6. See comments by Joseph Pechman. "An Appraisal of the 1950 Census Income Data," in Studies in Income and Wealth. Princeton, N. J.: National Bureau of Economic Research, Vol. 23, 1958.
7. City Worker's Family Budget and the CPI. Monthly Labor Rev. (Sept.), 1959, p. 968.
8. Origin and Program of the National Health Survey. U. S. Public Health Service (May), 1958, p. 32.

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This paper was prepared from a presentation at the Hospital Administrators Development Program, June 24, 1959, Cornell University, Ithaca, N. Y.

The organization of medical care must take into account not only the financing and the administrative aspects of the problem, but even more significantly perhaps the human beings involved. Here a sociologist shows why "the best laid plans" may not actually achieve what they are logically set up to do, because important social characteristics of the prospective clients are not considered.

THE ORGANIZATION OF MEDICAL PRACTICE AND PATIENT BEHAVIOR

Eliot Freidson, Ph.D.

THE INTENT of many studies in medical sociology is to determine why the prospective patient does not behave in the way that doctors would like him to behave, whether he avoids seeking the physician's services in the first place, or avoids taking his advice after having consulted him, or seeks the "wrong" practitioner or services. Saunders' work[1] and many of the reports on the Paul volume[2] stress the significance of extensive cultural differences between patient and doctor, and Koos's report[3] points to the significance of subcultural differences between patient and doctor.

However, these studies also point to differences between patient and doctor that are a function of differential positions in the social structure. To take but one example, it is clear from Koos's discussion that the chiropractor is used by some patients not only because of his ideological or cultural compatibility, but as well because his position in the community makes him more accessible than the physician. In fact, there seems to be a variety of more refined barriers that are a function both of the organization of the professional's practice—for example, whether it is a neighborhood or centralized practice, or individual or corporate—and of the community structure within which the client's search for help takes place.

This paper will report an instance in which some patients of one kind of organized practice—a prepaid, centralized medical group—went "outside" to use the services of another kind of practice—the independent, fee-for-service physician—and will be concerned with the extent to which such utilization can be understood by reference to the way in which the patient participates in the structure of the community, and the relation of the organization of practice to community organization and patient behavior. The data to be reported stem from two mail surveys of random samples of subscribers to that medical group, the major survey having obtained 67 per cent returns (N=676), and the smaller survey having obtained 92 per cent returns (N=121).

Two Practices

The medical group discussed here stands in a much different relation to the community than does the neighborhood physician. First of all, it recruits its patients in a different way. Whereas the neighborhood physician obtains his patients by virtue of his close proximity to them, and by virtue of word-of-mouth referrals, the medical group obtains its subscribers by virtue of their work, which makes them eligible to join the prepayment plan, and by virtue of their residence in the area served by a particular medical group. The word-of-mouth reputation of the medical group itself is but a marginal consideration. The solo neighborhood practitioner, then, recruits his patients in a word-of-mouth neighborhood context, while the medical group operates in a considerably more impersonal and mechanical context.

The patients as a whole, however, tend to come from relatively stable and close-knit neighborhoods and contact-networks.[4] Indicative of this is the finding that 64 per cent of those responding to the smaller survey report that they have lived in their present neighborhood for six years or more. Forty-four per cent have parents living nearby. Sixty-six per cent have some relatives, including parents-in-law but excluding parents, living nearby. Further, 71 per cent of them report that they see their parents or parents-in-law at least once a week. Forty-one per cent of them see at least one other relative at least once a week. Fifty-four per cent see at least one "really close friend" at least once a week. The idea of stable neighborhoods bound by ties of kinship and friendship contradicts the classic picture of life in the metropolis, but it does have some empirical support.[5]

In these neighborhoods there seems to be a good deal of lay consultation about symptoms, their treatment, and the physician who treated them. But experience with the physicians of the medical group is not likely to be shared by subscribers with all or even most of their lay consultants, for the medical group serves an area of about 20 square miles inhabited by over half a million people, only 25,000 of whom (including children) are patients of the group. In so far as the lay referral system[6] in which patients participate is bound up in a close-knit neighborhood, lay referrals are at least as likely to point to a neighborhood practitioner as to the medical group. Indeed, the smaller survey found that of those responding, 80 per cent knew of no relatives who also belong to the medical group, 49 per cent knew of no neighbors who belong to the group, and 49 per cent knew no fellow workers who belong to the group. In so far as relatives rather than neighbors and fellow workers are the most significant source of lay referrals to physicians,* lay consultations are even more likely to point to a neighborhod practitioner than to a practitioner in the medical group.

Indeed, what complicates matters even more is the high turnover of physicians

* The medical group discussed here treats patients who subscribe to a prepaid plan and who have selected that group to serve them. Subscription itself is largely on an employee-group basis, which implies that the fellow worker might be a potent source of support for the group. But we must remember first that fellow workers may not be served by the same group, and so may not be able to participate in establishing the reputation of particular group physicians. In intensive interviews with 71 adult members of 36 subscribing families, fellow workers were often mentioned in the context of supporting approval of the principle of the prepaid medical plan as such, and sometimes in the context of recommending one medical group rather than another. But in the many instances of lay diagnosis and referral that were explored in the interviews, only a small proportion involved fellow workers. It is the wife who is in fact most prone to use outside services for herself or the children whose medical care she supervises, and it is the extended family to which she turns first and most frequently for advice.

in the group—about 25 per cent a year. As his reputation emerges among subscribers, the group physician may very well be preparing to sever his relationship with the group, his place to be filled by a new physician who is unknown to the subscribers. The rationalized organization of the group in fact presupposes the interchangeability of physicians with like qualifications. Thus, personal commitments to individual physicians in the medical group are difficult to establish and maintain.

Finally, a significant difference between the two practices is economic. Beyond the subscription premiums deducted from the salary check, no additional fees need be paid to the medical group no matter how frequent the services obtained. The solo practitioner, of course, must be paid for each service he provides. In spite of this, however, the larger survey discovered that 10 per cent of the 635 subscribers responding indicated that they, or some member of their family eligible for prepaid group plan care, used a nongroup, "outside" doctor for most of their medical needs, hardly using the group practice for medical care at all. An additional 36 per cent reported the occasional use of such "outside" doctors, but primary reliance on the group for most medical needs. The remainder, 54 per cent of those responding, reported that neither they nor any member of their family had ever used outside doctors while they were entitled to group care.

Time and Social Class

One way to explain this differential use of outside services is by length of time in the group plan. Assuming that experiences in the group which might generate grievance or dissatisfaction are randomly distributed, assuming that it is only such experience that sends people outside (rather than the preconceptions they might bring into the group plan), then we should expect that the longer the patient is enrolled in the medical group, the more is he likely to have had an experience that motivates him to seek outside medical care from an independent practitioner. This hypothesis is tested in Table 1, where it is clear that the longer the patient is in the group, the more likely is he to have made "occasional" use of the outside services of an independent practitioner. But what gives pause to confirmation of the hypothesis is the fact that the proportion of "regular" users of outside physicians does not vary at all with time in the group. Apparently, the regular outside users bring some intransigent preconceptions into the

Table 1—Years Enrolled in Group Plan and Use of Outside Services

	Per cent Enrolled 2 Years or Less (N=133)	Per cent Enrolled for 3 or 4 Years (N=81)	Per cent Enrolled More Than 4 Years (N=418)
Regular users of outside services	11	11	10
Occasional users of outside services	21	36	41
Nonusers of outside services	68	53	49
Total per cent	100	100	100

$X^2 = 18.13$, $p < 0.01$.

Table 2—Highest Education and Use of Outside Services (All enrolled in group more than 4 years)

	Per cent Graduated College (N=150)	Per cent Some College (N=69)	Per cent Graduated High School (N=73)	Per cent Some High School (N=63)	Per cent Graduated Grammar School or Less (N=60)
Regular users of outside services	08	09	14	11	12
Occasional users of outside services	55	45	31	30	25
Nonusers of outside services	37	46	55	59	63
Total per cent	100	100	100	100	100

$X^2 = 26.29$, $p < 0.001$.

group plan and are not much affected by actual experience in the medical group. Mere time in the plan is significant enough to require control, but it does not explain why regular outside use takes place from the very outset when joining the group plan.

Many studies have shown that social class is closely related to utilization of professional services—indeed, it is plausible to expect that while everyone enrolled in the medical group may at some time or another wish to go "outside," only those able to afford double fees will actually go outside. Assuming that dissatisfaction is randomly distributed, we should thus expect that those of higher social class, who can better afford to pay an extra fee, would, when dissatisfied, be more likely to go outside for their medical care than those of lower class. This hypothesis is tested by tabulating the use of outside services by educational status in Table 2. It is clear that nonusers of outside services tend to be of low status, and occasional users tend to be of high status, which confirms the hypothesis. But in contrast, not confirming the hypothesis, regular users of outside medical services tend to be rather evenly distributed throughout the ranks, with at best a tendency to be concentrated in the middle and lower ranks. The same pattern ($X^2 = 28.77$, $p < 0.001$,) was found for occupations classified by Warner's scale. Obviously, social class and its contingent ability to pay has some bearing on the utilization of outside services, but it cannot constitute by itself a satisfactory explanation.

Social class, however, involves more than mere ability to pay. It also involves a subjective component that is associated with one's sense of self and his expectations of the way others will treat him. In this sense, what will dissatisfy one patient in a doctor's manner may not dissatisfy another. On the whole, we should expect patients of higher class to be more sensitive to a doctor's manner, and to the setting of medical services than those of low class. Data on such "status sensitivity" are presented in Table 3, where we see that relatively few nonusers of outside medical care, who are typically of low status, manifest sensitivity to "insult" or to a "clinic atmosphere." Somewhat more occasional outside users, typically of high class, manifest sensitivity, as we should expect, but an even greater pro-

portion of the regular users of outside services manifest sensitivity which, given their rather even distribution among the classes, seems disproportionately high.

Social class, then, both in its objective and subjective aspects, proves to be meaningfully related to the occasional use and the nonuse of outside medical services, but founders on the behavior of the regular outside user. Unlike the other patients, the regular user of outside services seems to enter the group plan already committed to go outside. He is disproportionately sensitive to "insult" and to the implication of "charity." And he goes outside in spite of his lack of any exceptional high ability to bear the extra cost.

Orientation to Medical Services

It appears that the regular user of outside medical services is committed to independent medical practice in advance of joining the group medical plan, since the amount of time he is in the plan has no relation to his behavior, and his sensitivity to his experience in it, compared to others, is disproportionately great. As well, we may say that the nonusers of outside services appear committed to the group medical practice as such, while the occasional users of outside services appear relatively uncommitted to either. This is clearly the case in Table 4, where ranged on one side are the subscribers who regularly use outside services, and who consistently and mark-

Table 3—Expression of Status Sensitivity by Use of Outside Services (All enrolled in group more than 4 years)

Questions and Answers	Per cent Regular Users of Outside Services	Per cent Occasional Users of Outside Services	Per cent Nonusers of Outside Services
"Did you or your wife or husband ever have an experience with a doctor when you felt that you were 'insulted?'"	(N=41)	(N=168)	(N=201)
Yes, by a private doctor only	—	02	02
Yes, by a group plan doctor only	34	19	10
Yes, by both private and group doctors	02	03	02
No, never	64	76	86
Total per cent	100	100	100
$X^2 = 14.08$, $p < 0.001$, based on combining rows, 1, 2, and 3.			
"Some people say that the group has a clinic atmosphere that makes them feel they are charity cases. Do you agree?"	(N=40)	(N=169)	(N=204)
Yes, very much	45	16	08
Yes, a bit	32.5	46	34
No, not at all	22.5	38	58
Total per cent	100	100	100
$X^2 = 46.81$, $p < 0.001$.			

Table 4—Use of Outside Services and Evaluation of Medical Services* (All enrolled in group more than 4 years)

Questions and Answers	Per cent Regular Users of Outside Services	Per cent Occasional Users of Outside Services	Per cent Nonusers of Outside Services
Quality of Doctors:			
"Does it seem to you that on the whole group plan doctors are better doctors than the ones you had before you joined the group plan?"	(N=29)	(N=146)	(N=167)
Yes, group plan doctors are better	03	03	25
Group plan and private doctors are about the same	42	83	70
Private doctors are better	55	14	05
Total per cent	100	100	100
$X^2=77.21$, $p<0.001$.			
Interest of Doctors:			
"Does it seem to you that on the whole group plan doctors are more interested in you than the doctors you had before you joined the plan?"	(N=37)	(N=167)	(N=198)
Yes, group plan doctors are more interested	03	16	37
Group plan doctors and private doctors are about the same	27	41	44
No, private doctors are more interested	70	43	19
Total per cent	100	100	100
$X^2=56.82$, $p<0.001$.			
Quality of Medical Care:			
"Do you think that on the whole you have gotten better medical care from the group than you got from private doctors before you belonged to the plan?"	(N=35)	(N=155)	(N=193)
Yes, got better medical care from group	14	49	59
Medical care from group and private doctors was about the same	32	36	36
No, got better medical care from private doctors	54	15	05
Total per cent	100	100	100
$X^2=62.94$, $p<0.001$.			

* Variation in number of respondents above stems largely from a variation in the number of "Don't knows," which are not tabulated here.

edly assert the superiority of the independent practitioner and his services. Ranged on the other side are the subscribers who use no outside services, no less markedly asserting the superiority of the group plan doctors and the group plan services. The occasional user of outside services falls somewhere in between.

But while the occasional user of outside services is relatively uncommitted to either method of providing services, he is characteristically critical in his approach to medical care as such. He

shares this critical attitude with the regular users of outside services, and these two are rather distinct from the nonuser of outside services, who seems passive and relatively uncritical. As we see in Table 5, the same significant pattern holds for answers to three questions —one dealing with shopping around for medical opinions, another with "dropping" a doctor because of dissatisfaction, and another with declaring a doctor to be incompetent. Considerably more users of outside services—whether regular or occasional—have made such critical responses to medical services.

However, in responding to the group medical plan as such, the critical response of the occasional user of outside services proves markedly different from that of the regular user of outside services in that the former attempts active manipulation of the system while the latter is more passive. Subscribers to the plan have the right to ask for a different doctor in the group if they are dissatisfied with the doctor they have. The patients were asked if they ever used that right. As Table 6 shows, the nonusers of outside services were typically satisfied — not wanting to

Table 5—Use of Outside Services and Critical Response to Medical Services (All enrolled in group more than 4 years)

Questions and Answers	Per cent Regular Users of Outside Services	Per cent Occasional Users of Outside Services	Per cent Nonusers of Outside Services
Shopping Around: "Have you or your wife or husband ever gone to a second doctor to get his opinion about some condition without telling your first doctor about going?"	(N=40)	(N=167)	(N=202)
Yes, before I belonged to group plan	02.5	08	13
Yes, when I belonged to group plan	36	28	03.5
Yes, several times before and while I belonged to group plan	20.5	17	03.5
No, never	41	47	80
$X^2 = 85.96$, $p < 0.001$.			
Dissatisfaction: "Have you or your wife or husband ever stopped going to a doctor because you weren't satisfied with him?"	(N=39)	(N=167)	(N=201)
Yes, a private doctor only	18	17	24
Yes, a group plan doctor only	31	14	07
Yes, both private and group plan doctors	20	25	11
No, never	31	44	58
$X^2 = 34.26$, $p < 0.001$.			
Imputing Incompetence: "Did you or your wife or husband ever have a doctor who seems to be incompetent?"	(N=40)	(N=170)	(N=197)
Yes, a private doctor only	07.5	09	14
Yes, a group plan doctor only	25	15	06.5
Yes, both private and group plan doctors	10	15	08
No, never	57.5	61	71.5
$X^2 = 20.68$, $p < 0.01$.			

Table 6—Use of Outside Services and Request for Change of Doctor (All enrolled in group more than 4 years)

Question and Answers	Per cent Regular Users of Outside Services	Per cent Occasional Users of Outside Services	Per cent Nonusers of Outside Services
"Have you ever asked to change your group plan Family Doctor?"	(N=39)	(N=169)	(N=199)
Yes, I've asked to change my doctor	23	36	19
No, but I've sometimes wanted to change	33	23	18
No, and I never wanted to change	44	41	64
Total per cent	100	100	100

$X^2 = 24.93$, $p < 0.001$.

change their group plan "family doctors." Both varieties of users of outside services, however, were dissatisfied to an almost identical degree, but the occasional user of outside services tried to do something about it by asking for a change, while the regular user of outside services tended to merely wish he could change.

These rather consistent differences in attitude toward group and independent practice suggest the value of determining the relation of these patients to independent practice prior to joining the group plan. Indeed, perhaps the simplest way of explaining variation in attitude, if not outside utilization, would be to indicate that each type of patient had experience with private practice that predisposed him to be receptive or antagonistic to group practice. When answers to a question about such experience are tabulated, as we see in Table 7, differences in experience are quite distinct. Almost three-fourths of the regular users of outside services indicated attachment to the doctor they had prior to joining the group plan, compared to only one-third of the nonusers—the occasional outside users falling in between the two extremes.

Conclusion

In discussing the significance of these data, a few factors of importance might be kept in mind. First, every practice must recruit a clientele. The medical group described here recruits them by largely impersonal methods; the independent practice recruits them by word-of-mouth neighborhood lay referrals. In the situation reported here, however, all the patients had already been recruited into group practice, but were confronted with the concurrent availability of independent practice. This requires us to note the obvious—that a clientele must not only be recruited, but also must be retained. The medical group can hold its patients largely by impersonal and technical methods—it can be attractive because it is cheap and because it has successfully "cured" perceived disorders. Independent practice can hold its patients largely by personal methods—it is conveniently available in the neighborhood much the way the small grocery store is more conveniently available than the supermarket, and it readily allows the patient to develop a personal commitment to the practitioner.

What are the characteristics of the patients that dispose them to use the services of independent practitioners even though they have been recruited into the medical group already? There is first the smallest and most uncommon group of patients—the regular users of outside care. Unlike those in other groups, these patients do not tend to be concentrated in any particular social class. While they tend to be critical and suspicious of medical care as such, and sensitive about their status as patients, these attitudes are applied to their experience in the medical group but not to their experience with the doctor they had before joining the group plan. However, it seems to be the degree to which most of them are strongly attached to an independent practitioner that underlies their response to the group itself—they seem to be committed "outside" in advance of joining the group, by virtue of a close personal tie with someone "outside."

Second, there are those patients who occasionally use outside services. They have a comparatively equivocal attitude towards medical practice as such—more of them are critical of independent practice than are the regular outside users, and more are critical of group practice than those who use no outside services. They seem to have no strong commitment to either. Indeed, their behavior is also equivocal, for they use the medical group for most services, but occasionally use an independent practitioner as well. Of high educational and occupational status, they are accustomed to choose and evaluate their services, rather than merely taking what is offered to them. When, after exhausting the possibility of manipulating the bureaucratic rules of the medical group it still seems that they cannot get the services they feel they need, or that it is not convenient to use the group, they will use an outside physician. Not only can they easily afford the convenience or sense of security given them by going outside, but they also feel competent to decide when group services are inadequate or inappropriate and to select a "good" outside physician.

Table 7—Use of Outside Services and Attachment to Prior Doctor (All enrolled in group more than 4 years)

Question and Answers	Per cent Regular Users of Outside Services	Per cent Occasional Users of Outside Services	Per cent Nonusers of Outside Services
"When you joined the group plan, were you sorry to leave your regular, nongroup plan doctor?"	(N=42)	(N=169)	(N=204)
"Yes, sorry to leave him"	17	31	28
"No, because kept him anyway"	55	27	04
Total attachment	72	58	32
"No, not sorry to leave him"	09	14	24
"Had no regular doctor"	19	28	44
Total nonattachment	28	42	68
Total per cent	100	100	100

Combining rows 1 and 2. $X^2 = 34.75$, $p < 0.001$.

The relative critical detachment characteristic of this group may also be understood as a function of their neighborhood mobility, for in the smaller survey it was found that these patients do not tend to be long-term residents in their neighborhoods. In addition, they tend to live in neighborhoods without their parents and relatives, and in fact interact with them infrequently. And fewer of them tend to know of relatives, neighbors, or fellow workers who also belong to the medical group. Consequently, not only does their mobility appear to discourage strong commitment to particular neighborhood practitioners, but it also prevents extensive reliance on the local lay referral structure that supports choice of one independent neighborhood practice or another. These patients flow between the two systems.

In contrast, the majority of patients —those who use no outside services— are long-term residents in their neighborhoods, and do participate in neighborhood lay referral systems. But their participation in community medical institutions prior to joining the medical group has been minimal. Their lack of commitment to outside physicians can be understood by reference to this prior experience, for as patients of generally low educational and occupational status, they have had often unpleasant experiences with the clinics and neighborhood practices they used. And many of them had no sustained contact with an individual practitioner. On the whole, then, they have had comparatively little opportunity to develop a commitment to an independent, neighborhood practitioner. On joining the medical group, they had little to predispose them to go outside, no "pulls" from their prior customary experience. Once in the medical group, neither their relatively uncritical attitude towards medical care nor their low sense of status sensitivity disposed them to find occasions to go outside.

REFERENCES

1. Saunders, L. W. Cultural Difference and Medical Care. New York, N. Y.: Russell Sage Foundation, 1954.
2. Paul, B. D., Ed. Health, Culture and Community. New York, N. Y.: Russell Sage Foundation, 1955.
3. Koos, E. L. The Health of Regionville. New York, N. Y.: Columbia University Press, 1954.
4. Katz, F. E. Occupational Contact Networks. Soc. Forces 37:52–55, 1958.
5. Weil, W., and Boat, M. D. Urban Neighborhoods and Informal Social Relations. Am. J. Sociol. 62:391–398, 1957.
6. Freidson, E. Specialties Without Roots: The Utilization of New Services. Human Org. (forthcoming).

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This paper is a revised version of one presented at the 1958 meeting of the American Sociological Society, Seattle, Wash.

Perinatal mortality has become the focus of much study by pediatricians, obstetricians, health departments, medical societies, and hospitals. The authors of this paper offer a method for analysis of the problem so that practical action may be taken.

A FORMULA FOR COMPARISON OF PERINATAL MORTALITY RATES IN HOSPITALS

Samuel M. Wishik, M.D., M.P.H., F.A.P.H.A., and Russell Rule Rycheck, M.D., M.P.H.

WITH the improvement of infant mortality rates, especially in the latter portion of the first year of life, pediatricians have been showing greater interest in the causes and prevention of neonatal mortality. With the realization of the close relationship between neonatal and fetal deaths, pediatricians have been joined by obstetricians, chiefly through county medical societies and in conjunction with local health departments, in creation of the relatively new term, perinatal mortality, and in its study. Since more than 94 per cent of all deliveries in the United States take place in hospitals, perinatal mortality becomes in large part a hospital problem. Therefore, hospitals and associations of hospitals have joined in the common effort.

Through use of review committees, clinical studies of cases have been made. These have been supplemented by statistics. For mortality statistics to be helpful in prevention, there should exist some basis for comparison of the statistics with something else, some kind of standard. A standard for perinatal mortality could be derived from data of the entire nation. For obvious reasons of homogeneity, it would seem preferable to compare a hospital with the other institutions in its own community or region.

The objections that have existed to comparison of mortality rates between hospitals—that hospital populations vary and therefore that the difficulty of the task faced and the expectation of survival differ from hospital to hospital—certainly apply to perinatal mortality. The solution would seem to lie in studying, to whatever extent possible, the factors contributing to mortality which are identifiable and measurable and which may be present to varying degrees in the different hospital populations. One might call these "exogenous" factors beyond the control of the hospital, as contrasted with "endogenous" factors affected by the quality of hospital care. To the extent that exogenous factors can be identified and measured, expectations of results might be adjusted accordingly. At least, a hospital should make comparisons of its own results from one period to another on the assumption that exogenous contributory factors vary less within a single institution. Since, of course, these are not

unchanging even within a single institution, it might permit more meaningful comparison to try to adjust for recognizable changes that take place in a hospital over a time period.

When an infant is born in a hospital, it is difficult to think of many factors contributing to his survival or death that can be exclusively exogenous and beyond being influenced by the hospital's staff, facilities and program in relation to the maternity care of the mother and the supervision of the delivery. Obviously, a train of events such as low economic level, inadequate prenatal care and a higher prematurity rate might produce a higher perinatal mortality rate. Or, a teaching institution might accept or receive a higher proportion of complicated cases with greater consequent infant loss, either fetal or neonatal.

In this paper an attempt is made to take only a few first simple steps toward adjusting for variables in the medical burden that faces hospital maternity services in respect to infant survival. The attempt at adjustment aims at obtaining greater comparability of results, as an indirect index of the quality of medical care in those hospitals. Among the easily identifiable and measurable factors that are known to be associated with differences in perinatal mortality, as highlighted by the work of Sam Shapiro,[1,2] the following are outstanding:

1. Sex—Male babies are at higher risk.

2. Birth weight—Babies at the low and high extremes of birth weight have the highest risk. This is true both for fetal mortality and neonatal mortality.

3. Plural births—Twins or triplets have a poorer chance of surviving than single-born babies. But weight for weight, they are at lower risk than the single births, presumably on the basis of their being more mature in gestation time, though smaller in weight because of dividing the mother's nourishment between them.

4. Race—The disadvantaged Negro infant, by and large, has less chance of survival than the white baby. But, among the smaller babies, pound for pound the Negro baby has a better survival record, again, presumably because he is more mature than the white baby of equal weight. The "norm" of the Negro baby's birth weight seems to be lower than that of the white.

This initial effort is limited to two of the above factors and includes none of the others that might come to mind, such as socioeconomic level, parity of the mother, or the mother's previous pregnancy history. If the method has validity, these may be additional refinements of the future. Sex is not included in the formula because one would expect a reasonably consistent and similar distribution between the two sexes in births from various institutions. We know of no study that has demonstrated anything to the contrary. Plural births are disregarded for similar reasons, but more because the numbers are so small that it would be difficult to subdivide the data of each hospital into this many variables. It is possible that plural births could at times be an important consideration, in connection with the fact that antepartum diagnosis of twins might lead to the mother's being referred to a teaching hospital.

The only factors that are here considered are birth weight and race. The importance of differentiating between white and Negro clientele is beyond question, both because of differences in distribution of birth weights (Figure 1) and differences in mortality (Table 1).

Within each racial group, are there enough differences between hospitals in distribution of birth weights to warrant consideration? Review of the Pennsylvania data for 1957 confirmed expectations. Most variation exists among the premature infants, with a six- or sevenfold range within some 500 gram weight groups. Less variation in incidence occurs among the oversize babies and the least deviation is found around the average weights. Within one large hos-

pital, there was a 3 per cent difference in the prematurity rates among babies born in two divisions of the institution and almost the entire difference consisted of infants of less than 1,000 grams. Since appreciable variations do exist and since they occur predominantly in the weight groups with the higher mortality rates, an attempt at adjustment for these differences seems indicated. Failure to report birth weights of many babies would seriously reduce the meaningfulness of the adjustments. Within reason, allowances for unknown birth weights can be made by estimated gestation time, as described some years ago by Schlesinger and Parkhurst.[3] We have included unknown birth weights in the adjustment procedure by applying the average state mortalities for all infants with unreported birth weights.

The background for obtaining the data which were used in developing and testing the proposed adjustment formula is as follows. Under the aegis of the State Committee on Fetus and Newborn of the Pennsylvania Chapter of the American Academy of Pediatrics, a

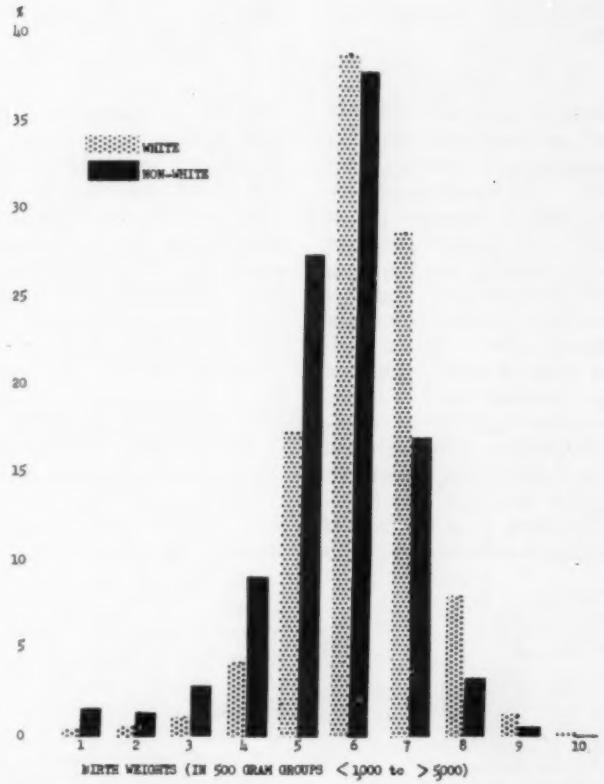

Figure 1—Per cent Distribution of Birth Weights of White and Nonwhite Infants in Pennsylvania—1957 (Stillborn and Liveborn)

Table 1—Ratios of Nonwhite to White* Perinatal Mortality Rates, by Birth Weights —Pennsylvania

Birth Weights in Grams	1957 Fetal Mortality Ratios	1957 Neonatal Mortality Ratios	1957 Perinatal Mortality Ratios	1958 Fetal Mortality Ratios	1958 Neonatal Mortality Ratios	1958 Perinatal Mortality Ratios
Totals	177.7	190.5	182.6	196.6	216.6	204.0
<1,000	91.6	93.0	96.3	100.1	96.2	98.3
1,000-1,500	83.4	87.9	89.1	76.0	94.7	92.7
1,501-2,000	71.1	63.2	67.8	63.1	67.2	67.7
2,001-2,500	82.1	57.7	69.8	93.4	71.7	81.5
2,501-3,000	*77.2*	*57.4*	*67.7*	*76.2*	*98.1*	*87.7*
3,001-3,500	*94.0*	141.7	117.3	120.0	144.2	130.7
3,501-4,000	175.0	173.0	174.0	136.6	246.0	163.8
4,001-4,500	240.3	328.3	274.3	253.7	200.0	228.6
4,501-5,000	165.1	694.9	285.6	187.5	141.4	164.6
>5,000	93.3	632.9	259.1	270.2	565.4	315.4

* White = 100.

group of pediatric department heads in 13 hospitals* gathered voluntarily in 1956 to discuss ways of lowering perinatal mortality. The first phase of their efforts consisted of a six-month period during which each hospital reported statistics on its births by weight, race, and outcome. Following this cooperative effort, the same hospitals moved into a second phase in which a clinical analysis is being made of infant births and deaths. One important outcome of the first phase was that Dr. Albert E. Bailey, director of the Division of Statistics and Records of the Pennsylvania Department of Health, agreed to compile data for all hospitals in the state along the lines of the statistical report submitted by the 13 hospitals. Consequently, the second body of data for testing an adjustment formula are for the first two years, 1957 and 1958, when this information became available for all births in all hospitals in the state.† There are obvious advantages and disadvantages in obtaining data directly from the hospitals or from the vital statistics of a health department. Although the method of comparing hospital mortality rates which is here being proposed can be used in either case, description will be limited to the procedure which places most of the burden on the health department for collection, compilation and analysis of data and for reporting and interpretation to the hospitals.

The term perinatal mortality was designed to obtain a more inclusive picture of the situation than is forthcoming with either fetal or neonatal mortality rates alone. Since perinatal mortality is a composite of the other two, one might

* Altoona Hospital
Bryn Mawr Hospital
Clearfield Hospital
Coatesville Hospital
Easton Hospital
Geisinger Memorial Hospital, Danville
Harrisburg Polyclinic Hospital
Magee Hospital, Pittsburgh
Pennsylvania Hospital, Philadelphia
Philadelphia General Hospital
St. Luke's Hospital, Bethlehem
Temple Hospital, Philadelphia
York Hospital

† Appreciation is extended to John H. Vineyard, Jr., chief of the Statistical Methods Section, for this work and for permission to use this material.

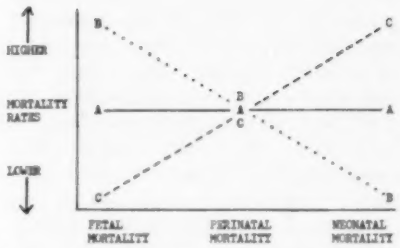

Figure 2—Patterns of Composition of Perinatal Mortality

question the need for giving more than the perinatal figure. Does it alone give an adequate picture? Although fetal and neonatal deaths have many factors in common, they are different phenomena, clinically. Statistically, too, a perinatal mortality rate, whether it is high, medium or low, can be of three possible patterns: (See Figure 2—Where the fetal and neonatal rates are at similar levels; where one is high and the other low; and the reverse.) A look at the Pennsylvania data quickly showed that all three patterns do exist. Figure 3 gives examples of this. It can be concluded, therefore, that the current practice of studying and reporting on all three rates, not merely the perinatal mortality rate alone, is necessary for the greatest value to be derived from comparisons. More than this, it would be desirable to expand and strengthen efforts to obtain complete enough data to subdivide the rates still further; on the one hand fetal mortality broken down into antepartum and intrapartum death; and neonatal mortality by age at death.

With the data in the usual 500 gram weight groups, it had been hoped that it would be possible to combine a number of the weight groups so as to have fewer cells for the calculations. The 1957 Pennsylvania average mortality rates for the three outcomes of fetal, neonatal, and perinatal death for all races combined are presented in Figure 4. It is clear that for all except the middle portions of each curve, each 500 gram weight group was significantly different from the next. Therefore, little advantage could be derived from partial combinations or mergers, especially since the specific points of critical differences between weight groups varied slightly for each of the nine tables—that is, fetal, neonatal, and perinatal mortality rates for white and nonwhite and for all races combined.

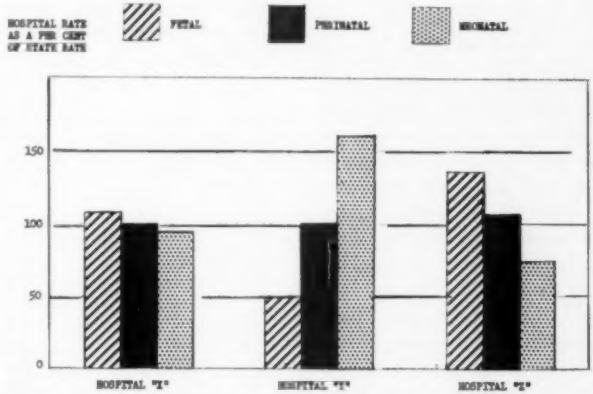

Figure 3—Patterns of Composition of Perinatal Mortality

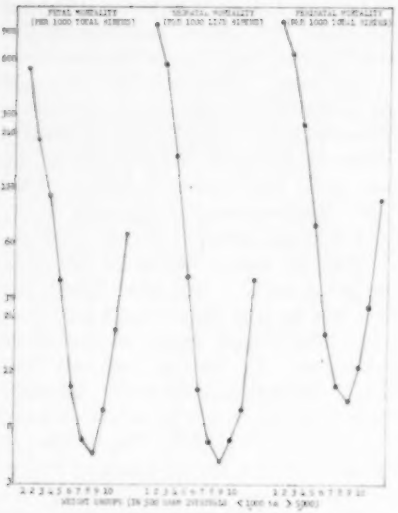

Figure 4—Perinatal Mortality Rates——Pennsylvania, 1957

Proposed Method of Adjustment of Rates and of Reporting to Hospitals

A chart of fetal, neonatal, and perinatal mortality rates for ten weight groups and two racial groups would come to 60 cells. If this were to be submitted to a hospital, the report would present the 60 different mortality rates in that hospital during the reporting period side by side with the corresponding average rates for the entire group of hospitals for comparison. Table 2 gives as an example only one-sixth of this part of the material that a hospital would receive, if there were an appreciable number of white and nonwhite patients. There would have to be similar tables for fetal and neonatal mortality. This is an overwhelming amount of data for the hospital to look at. By careful and painful perusal, the hospital staff might be able to determine for some of the racial and weight groups how well it is doing in comparison with the average of all the hospitals. Even if the weight groups were combined into premature and full-term groups, as is now done in different parts of the country, the task for the unsophisticated among hospital and medical personnel may be formidable. Most people like to see a single number, a rate for the total situation. Unfortunately, as is true of any averaging process, the over-all rates can obscure even gross differences in mortality in different groups of infants.

To facilitate comparison and to unify the data, a report sheet (Table 3) is proposed that would carry only the ratios of each hospital's data to the average of all the hospitals. The ratio of average perinatal mortality among all the hospitals as the denominator under mortality in this hospital as the numerator, multiplied by 100, would indicate that anything below 100 is better than average (although not necessarily good), and anything above 100 is poorer than average. Two similar tables would be given for fetal and neonatal mortality ratios, respectively, all based on 100 as an average score.

Attention should be called to several features of this table. First, in the report to the hospital, 500 gram weight groups have been replaced by three

Table 2—Comparison with All Hospitals in the State; Perinatal Mortality Rates (White)

	Birth Weights (Grams)	Per 1,000 Total Births	
		This Hospital	State Averages
(1)	<1,000	965.5	972.2
(2)	1,000-1,500	381.0	668.8
(3)	1,501-2,000	211.5	286.5
(4)	2,001-2,500	96.0	78.7
(5)	2,501-3,000	30.2	20.1
(6)	3,001-3,500	11.4	9.8
(7)	3,501-4,000	6.6	7.7
(8)	4,001-4,500	14.4	11.3
(9)	4,501-5,000	37.7	25.0
(10)	>5,000	111.1	96.5

grosser classes. Separation points for these were 2,500 and 4,500 grams. The combination into these three classes has not been made without regard to the distinctive and critical mortality rate differences previously described at 500 gram steps. On the contrary, these differences have been used as the basis for weight-specific adjustments. Therefore, the word "adjusted" in the heading of the table.

Adjustment is made by a modification of the simple and time-worn statistical method. The actual number of deaths in each weight group is compared with the number of deaths that would be expected if the average mortality rate among all the hospitals for that race and weight group existed in this hospital (Table 4). Now the expected number of deaths can be added into a grand total or into selected subtotals, and corresponding ratios to actual deaths in those groups can be obtained.

Does breaking the totals down into subcells by race, by weight and by fetal or neonatal mortality introduce error? A study of the Pennsylvania data gave a basis for minimizing possible distortions from small numbers. Ratios for the 500 gram weight groups are applied only for 5,000 or more total births in a racial group; but ratios for premature and full-term infants, respectively, are applied for 1,000 or more. The New York State Health Department, in its publications of hospital ranking in perinatal mortality,[4,5] made adjustments for birth weight distribution and presented the data for groups of premature and full-term infants for 2,500 or more births (hospitals with 500 or more deliveries per year during a five-year period).

The traditional separation point between premature and full-term infants does not give consideration to the critical, often fivefold, change in mortality rates between the 1,501-2,000 gram group and the 2,001 - 2,500 gram group, nor to the sharp rise in mortality among oversize infants. For this reason, subdivisions of the reports of the adjusted data are suggested whenever there are enough births in the groups. Except for grand totals, data would be kept separate by race. At the end of a first year of analysis, a state health department report could cover that year only, could add data for each of the next four years as obtained and thereafter could cover the most recent five-year period. In all reports, all hospitals should be included in arriving at totals for the state and for hospitals grouped by size, but individual hospitals should receive ratings in the various weight groups only as each accumulates enough births for the corresponding items, as indicated in Table 5.

For application of the method to special premature centers, careful attention would have to be given to intake policies and practices, especially age of transfer of infants from other hospitals. It is interesting to note, however, that the Illinois Premature Program reported greater variation in percentage distribution of birth weights of premature infants born in the special centers than transferred into them.[6]

Table 3—Comparison of Hospital "W" with All Hospitals in the State

Adjusted Perinatal Mortality Ratios

Birth Weights	White	Non-White
Premature (2,500 grams and below)	87	103
Medium weight (2,501-4,500 grams)	117	125
Large (Over 4,500 grams)	124	160
Totals—by race	100	109
Total—all races	102	

(100 = average; below 100 = better than average; above 100 = poorer than average.)

Table 4—Method of Adjustment for Population Differences

Weight Groups (in Grams)	No. Births this Hospital	No. Deaths this Hospital	State Average Mortality Rates (Per cent)	"Expected" No. Deaths	Ratio of Actual to Expected No. Deaths
<1,000	——	—	——	——	——
1,000-1,500	——	—	——	——	——
1,501-2,000	100	42	28.6	28.6	$\frac{42}{28.6} \times 100 = 147$
Etc.	——	—	——	——	——
Totals	3,000	75		50.0	$\frac{75}{50} \times 100 = 150$

Consideration was given to the method of adjusting the figures, not according to average mortality for different weight groups, but according to average distribution of the weight groups among the births, just as one adjusts age-specific mortality rates to the age distribution in a standard population. The two methods give the same arithmetical total results, but the method of using average mortality rates seems to give a better picture of the dynamics of the problem, to be closer to the clinical understanding of physicians and to permit the use of subtotals which could not be derived by the other method.

Each hospital would obtain from such reports an impression of whether it is having outstanding, mediocre, or poor success as compared with the average of the participating hospitals, on the assumption of equal magnitude or difficulty of the task that faces those hospitals with respect to the two characteristics of birth weight and race (Table 6). The validity of the assumption based on birth weight is somewhat less clear for fetal mortality, and consequently perinatal mortality, than it is for neonatal deaths. Whereas a certain liveborn premature infant may have died because he had been born too soon, a stillborn premature infant may have been born because he had died too soon. If a hospital by poor obstetrics produces an inordinate proportion of small premature and vulnerable infants, the formula might be construed as giving this hospital a premium for poor work. Therefore, the per cent distribution of babies in the weight groups must be looked at and suitable explanations sought for those unusual departures from the typical pattern that constitute the basis for adjusting the mortality rates.

Also, it bears repeating that there is an earlier hidden part of the continuum that not only does not show, but may distort the figures that appear above the surface. Theoretically, the paradox undoubtedly could exist that better prenatal care could carry a weak fetus to the point of becoming large enough and old enough to be a candidate for a statistical fetal death. For a total appraisal of the situation, one needs to include data on earlier fetal deaths. Within the present state of statistics and reporting, however, and especially in a program that is hospital focused, one has to be satisfied with only a part of the story. With time, as data become available for earlier periods of gestation, and this should not be too difficult for hospital

populations at least, the data should be organized in some fashion such as the eight-week steps suggested by the World Health Organization.[7]

With this limitation, and it is a serious one, what is the value of dividing fetal deaths into three weight groups? Even in such a gross division, it is clear that a poor standing or rating for fetal deaths of very large infants has one connotation that may point toward problems in anesthesia, treatment of toxemia or diabetes. On the other hand, a poor rating in fetal deaths of premature infants may point toward such problems as too early Cesarean section, induction of labor, or the treatment of placenta previa, multiple births, or the breech delivery of the second of twins. The statistics give a clue for a more focused look. This should be of particular value to perinatal mortality study committees. These have, in large part, patterned their work after the earlier maternal mortality study committees which usually attempted to obtain clinical information on all maternal deaths. The numbers of perinatal deaths are so great that any committee soon becomes bogged down with the mass of work that is involved in a 100 per cent study. Each perinatal mortality study committee, then, whether on a state-wide, county-wide, or intra-hospital level, should decide in some way to narrow its scope of clinical study down to only a portion of the perinatal deaths. Such narrowing could mean studying fetal deaths or neonatal deaths,

Table 5—Patterns for Breakdown of Data in Perinatal Mortality Reports

Degrees of Breakdown of Data	For Entire State	For Three Groups of Hospitals By Number of Births. Large (2,500 and over) Medium (2,499-1,000) Small (Below 1,000)	For Individual Hospitals—Accumulated Number of Births During Span of Report Period			
			5,000 or More	4,999-2,500	2,499-1,000	Less Than 1,000
Totals only Fetal, neonatal and perinatal	X	X	X	X	X	X (For 5-Yr. periods only)
Fetal, neonatal and perinatal—by premature and full-term births	X	X	X	X	X	
Fetal, neonatal and perinatal—						
Premature (2,000 gms and below) Premature (2,001-2,500 gms)	X	X	X	X		
Full-term (2,501-4,500 gms) Full-term (over 4,500 gms)						
Fetal, neonatal and perinatal—by 500-gm weight groups	X	X	X			

Table 6—White Perinatal Mortality in 29 Hospitals During 1957-1958 (Adjusted to Distribution of Birth Weights and to Mortality Rates in the Entire State of Pennsylvania)

Allegheny County		Perinatal Mortality Ratio to State Average	Infants at Highest Risk—Per cent Above Perinatal Averages for Same Hospitals				No. of Unreported Birth Weights
			Premature		Full Term		
			Fetal Deaths	Neonatal Deaths	Fetal Deaths	Neonatal Deaths	
All hospitals combined		105					189
22 hospitals with 1,000 or more births each—combined		105					189
Rank Order	Code Letters						
1	C	83					8
2	E	85				34	5
3	A	86					8
4	B	94			29		0
5	H	95	27				23
6	F	96					1
7	D	98					1
8	J	100					6
9	L	101					1
10	M	102			29		5
11	T	103	29				2
12	G	104			31		5
13	K	104					32
14	P	106			23		3
15	N	109					6
16	V	109					25
17	S	115				20	24
18	Q	116			26	43	7
19	W	117	41				5
20	U	120			45		17
21	R	121					3
22	Y	123					2
7 hospitals with less than 1,000 births each—combined		108					0

but with the perinatal focus, the division would be more likely to come along other lines, such as weight groups. The 13 cooperating hospitals in Pennsylvania, for example, to which we have already referred, decided to concentrate on only a portion of the premature problem and selected fetal and neonatal deaths of what was called the "intermediate" weight group of premature babies—those between 1,000 and 2,000 grams. These babies were large enough to have a reasonable chance of survival and therefore were of interest to the

pediatricians. They were small enough for the obstetricians to ask themselves, "Why were they born so soon?" and "How did their prenatal and obstetrical course relate to their death?" As another illustration of narrowing the focus, the 1957-1958 data were analyzed and presented to representatives of the 29 hospital maternity services in Allegheny County, Pa., so as to indicate whenever a hospital seemed to be doing more poorly with one group of infants than with the others* (Table 6).

Earlier in this paper it was said that, in addition to a hospital comparing itself with a baseline of a group of hospitals, it might want to compare itself with its own record in previous years. For this purpose, the same method as described above can be used. The baseline for the hospital, instead of being the average of all the participating institutions, is composed of the mortality rates of that hospital in a previous time period. The hospital then, on another sheet of the report, would see the same kind of a chart as Table 3 with a ratio revolving around the number 100 for each of the indexes. This time, a lower number than 100 would mean that the hospital for that index had improved its work over the previous time period. A number higher than 100 would mean the opposite.

Summary of possible components of report to each hospital:

1. The hospital's rank position in adjusted perinatal mortality ratio to the state average (for each racial group) (Table 6).
2. Unusual distribution of weight groups among births in the hospital.
3. Higher mortality ratios among certain types of infants in the hospital (Table 6).
4. The hospital's adjusted ratio to its own records during previous time periods.
5. An interpretive commentary.

* Perinatal Study Committee for Allegheny County, under the auspices of the Pittsburgh Pediatric Society, the Pittsburgh Obstetrical and Gynecological Society, and the Allegheny County Medical Society.

Conclusion

The proposed method is based on a division of responsibilities on a bipolar line ranging from the simple to the difficult. The difficult portion, difficult not in complexity, but merely in mass of work, would rest with the agency or group that would study the data and furnish the reports, such as a local or state health department. Computer programing makes the task more feasible. The part that has been made as simple and as clear-cut as possible is the report which the people in the hospital would receive. There, things are boiled down to variations on a theme of the number 100. It is easy to comprehend a set of figures which are somewhat above or below 100, with certain of the numbers circled for special attention.

Perhaps the greatest potential value of the method is that it may strengthen what is probably the most important aspect of a perinatal mortality study effort. This is local involvement in each hospital. It is not enough for a county group to concern itself with the problem. It is not enough for cases to be reported in the medical journal of the county or state. It is not enough for meetings to be held where cases are discussed before those who come. The full effect of a perinatal mortality study will be felt when each hospital staff gets down to cases and gets concerned about the problem. They cannot do this too well as long as the problem is as varied and extensive as it now is. If each hospital can be helped to look at one piece of the problem with a special look, because someone else takes the trouble to analyze the figures and interpret and report them, the money and effort expended would bring high returns.

REFERENCES

1. Shapiro, Sam, and Unger, Jeanne. Weight at Birth and Its Effect on Survival of the Newborn in the United States, Early 1950. Vital Statistics—Special Rep. Selected Studies (U. S. Public Health Service,

National Office of Vital Statistics), 39,1:1–33 (July 23), 1954.
2. Shapiro, Sam; Weiner, Louis; and Densen, Paul M. Comparison of Prematurity and Perinatal Mortality in a General Population and in the Population of a Prepaid Group Practice, Medical Care Plan. A.J.P.H. 48,2:170–187 (Feb.), 1958.
3. Schlesinger, Edward R., and Parkhurst, Elizabeth. Personal communication, 1959.
4. New York State Department of Health, Office of Vital Statistics and Bureau of Maternal and Child Health. Infant Mortality and Stillbirth Rates by Hospitals and Regions, 1945-1949. Albany, N. Y.: The Department, 1950.
5. New York State Department of Health, Office of Vital Statistics and Bureau of Maternal and Child Health. Neonatal, Stillbirth and Perinatal Mortality and Operative Procedures for Delivery by Hospitals and Regions, New York State, Exclusive of New York City, 1950-1954. Albany, N. Y.: The Department, 1955.
6. Rawlings, Donaldson. "The Illinois Program for Care of Premature Infants," in Perinatal Casualties: A Challenge to MCH and CC Programs (Proceedings of December 8-12, 1958 Institute). Center for Continuation Study, University of Minnesota, Minneapolis, 1959, pp. 68–94.
7. World Health Organization. Expert Committee on Health Statistics: Report on the Second Session. WHO Tech. Rep. Ser. No. 25, Geneva, 1950.

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This paper was presented before a Joint Session of the American Association for Vital Records and Public Health Statistics and the Maternal and Child Health and Statistics Sections of the American Public Health Association at the Eighty-Seventh Annual Meeting in Atlantic City, N. J., October 20, 1959.

Neglected Area

Many doctors regard the obese patient as a neurotic nuisance and the diet treatment as a complicated bore. They dismiss obese patients with a few general admonitions, a printed list of foods, and a medication. Seldom does a physician give an obese patient's diet problems the attention that might be applied to regulating insulin for patients with diabetes or diuretics for those with heart disease. . . . The emergence of so many nonmedical individuals as guides in the treatment of obesity has been due in part to the large popular demand and in part to the disinterest and apathy of many physicians.

Alvan R. Feinstein. The Treatment of Obesity, an Analysis of Methods, Results, and Factors Which Influence Success. Journal of Chronic Diseases (Apr.), 1960.

Lead paint poisoning in children caused by ingesting paint containing this metal is preventable. Public health authorities are taking steps to prohibit the interior painting of dwelling units with such paint and are removing it under nuisance abatement powers. The author describes a simple and inexpensive procedure for rapidly screening paint scrapings to determine compliance with regulations.

DETERMINATION OF LEAD IN PAINT SCRAPINGS AS AN AID IN THE CONTROL OF LEAD PAINT POISONING IN YOUNG CHILDREN

Emanuel Kaplan, Sc.D., F.A.P.H.A., and Robert S. Shaull, B.S.

LEAD paint intoxication is now recognized as a frequent source of accidental poisoning in young children.[1] Since 1931, almost 800 cases have been reported in the city of Baltimore with 124 deaths. An increased incidence is also noted from cities such as Chicago, New York, and Cincinnati, where interest and awareness concerning the malady are high.[2-4] Cases usually occur in children living in old, low income area properties, where lead paint has been used indoors for many years. As a rule, the victims are at teething age, from about one to three years, with a history of pica and have ingested peeling, flaking, and scaling paint from walls, woodwork, and window sills. In Baltimore, where such paint is found accessible to children, it is ordered removed under the Baltimore ordinance on the hygiene of housing, which requires every dwelling or part thereof to be maintained in good repair and fit for human habitation, and where any condition is found to be dangerous or detrimental to life or health, the commissioner of health may order it removed (Sections 113 and 114 of Article 12, City Code of 1950). Also, since 1951, the same ordinance prohibits the use of paints for interior painting of dwellings unless the paint is free of lead pigment. As a further safeguard, in 1958, a lead paint labeling ordinance, No. 1504, was passed in Baltimore which requires a warning label on any paint containing more than 1 per cent of lead, determined as metallic lead based on the total nonvolatile content of the paint. The label states "WARNING—Contains Lead. Harmful if eaten. Do not apply on any interior surfaces of a dwelling, or of a place used for the care of children, or on window sills, toys, cribs, or other furniture."[5]

Warning labels are also required by the Sanitary Code of New York City and by the state of Kansas,[6] and similar legislation is being considered in other

states. In 1955, under the sponsorship of the American Academy of Pediatrics, the American Standards Association drew up specifications to minimize hazards to children from residual surface coating materials such as paints, enamels, and lacquers. The specifications stipulate the absence of lead in excess of 1 per cent.[7]

In the enforcement of labeling ordinances, it is necessary to test samples of paint for lead content. Similarly, in the investigation of cases of lead paint poisoning in young children or in home inspection aimed at prevention of lead paint poisoning by removing existing lead paint, the testing of samples of paint scrapings for lead is required to confirm the source of exposure. The mere qualitative detection of lead is insufficient because of the widespread use of driers containing lead in paint manufacture, usually in amounts corresponding to less than 1 per cent of lead in the finished paint. Conventional quantitative methods for lead in paint are slow and tedious and do not readily lend themselves to mass testing. A painstaking gravimetric chromate procedure for lead in paint at the 1 per cent level developed by the National Paint, Varnish, and Lacquer Association[8] was recently submitted to collaborative study by the American Society for Testing Materials (ASTM). As a referee method where speed is not a factor, and if sufficient sample (2 grams) is available, the method is reported to give satisfactory results.[9]

It is the purpose of this paper to describe a practical screening test suitable for both the laboratory and the field, which requires only 25 mg of sample and is capable of quickly differentiating paint scrapings containing in excess of 1 per cent of lead. For practical purposes, it is not necessary to make a true quantitative determination of the exact amount of lead present in a positive test (more than 1 per cent Pb). Paint removal is required whether the offending coating contains 2 per cent or 20 per cent Pb. It is estimated that in the city of Baltimore there are from 10,000 to 25,000 houses wherein lead-bearing paint may be involved. In inspections, multiple samples are frequently collected from various locations throughout a number of rooms of a dwelling unit. Only a rapid, simple, and inexpensive test procedure can deal with such an enforcement problem. The screening method requires but reasonable care and simple technic. A trained and skilled chemist is not needed in its performance. If necessary, in the laboratory, more than 150 samples can be tested in a day by a single operator.

Screening Method

In principle, a 25-mg sample of paint scrapings weighed on a rapid field balance is digested with nitric acid solution to extract lead. Water is added and the lead is precipitated as the iodide. Conditions are empirically adjusted so that more than 1 per cent of lead is required for a positive test.

The 25-mg balance is made from a section of plain white index card glued onto a piece of one-quarter inch square hobby shop balsa wood (Figure 1). To calibrate the balance, place it on a smooth surface. A 25-mg weight on the sample area (1) should just barely tilt the beam down; if not, the opposite end is trimmed slightly until it does. The adjustment should be such that 22 mg of weight at (1) will not affect the beam but 28 mg will tilt it decisively. To prevent overweight, the beam should rise when a 25-mg weight is moved from position (1) to position (2). The balance will weigh 25 mg with an accuracy of ± 3 mg. In daily use for more than a year, there was no loss in accuracy.

In the test, if possible, select a thick, multilayer, paint chip-free of wood, plaster, or other extraneous material.

Using forceps and field balance, weigh and transfer a 25-mg portion to a 13 x 100 mm Pyrex glass tube. Add three drops of HNO_3 solution (1+1). Place tube in boiling water bath for 15 minutes. In multiple sample testing, because of oxides of nitrogen evolved, this operation should be carried out with adequate ventilation, preferably in the fume hood. Remove tube from the water bath and add two ml of freshly prepared 1 per cent sodium sulfite solution. Centrifuge at low speed for five minutes or allow to stand undisturbed for ten minutes to permit extraneous matter to settle. Place tube in a water bath at 60-65°F for five minutes. Allow two drops of 20 per cent potassium iodide solution to fall directly onto the tube contents. Do not shake the tube. In a positive test, an immediate yellow precipitate or one that appears within one second denotes the presence of more than 1 per cent of lead.

Field Test—The lead iodide screening test is also adapted for use in the field. Reagents are contained in one-half ounce dropper vials. Styrene poly-seal closures are more resistant to acid attack than is bakelite. Safety matches, an alcohol lamp, or a candle may be used and the tests are heated to boiling for approximately 30 seconds, or until top of tube becomes quite hot to the touch.

Discussion

Possible Interferences in the Screening Method—Metals in addition to lead which yield insoluble iodides in acid solution are silver, thallium, and mercury. These elements are unlikely to be encountered in house paint. Mercury iodide dissolves in excess of KI solution. "Gilt," "bronze," gold-leaf, and metallic finish paints, sometimes used on radiators and occasionally on furniture, frequently contain copper salts which precipitate with KI, yielding a brownish turbidity colored by liberated iodine. Also, oxidants in some fungicidal and mold inhibiting paints may liberate colloidal iodine. The use of 1 per cent sodium sulfite solution instead of water eliminates the interference.

Sensitivity of the Screening Method—The precipitation of lead iodide is conditioned by a number of variables including concentration of lead, solubility, temperature, reagent concentrations, reaction time, and so forth. The

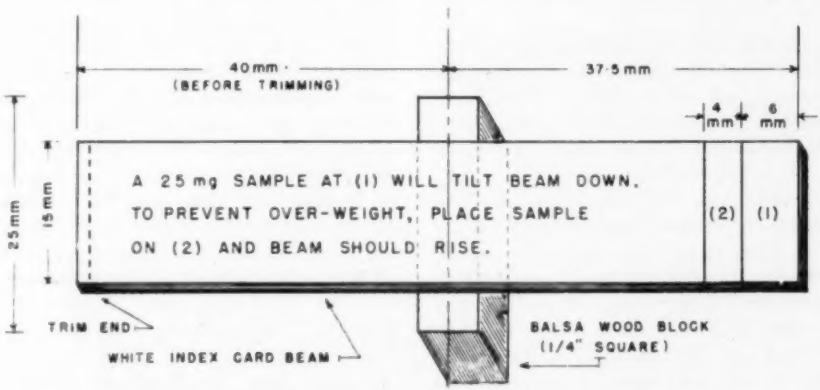

Figure 1—Field Balance for Weighing 25 Milligram Sample

Table 1—Effect of Temperature on Lead Iodide Precipitation in Screening Test

Temperature (°F)	Per cent Lead (Pb)						
	0.8	0.9	1.0	1.2	1.5	1.8	2.0
50	0	0	+	+	+	+	+
60	0	0	0	+	+	+	+
70	0	0	0	0	+	+	+
80	0	0	0	0	0	+	+
90	0	0	0	0	0	+	+

+ Denotes an immediate yellow precipitate or within one second.

conditions in the screening method were empirically arranged so that 1 per cent of lead would not form a precipitate immediately upon the addition of the KI reagent or within one second thereafter. In practice, about 1.3 per cent or more of lead is required for a positive test. The importance of the temperature of the reaction is demonstrated in Table 1 which shows the results of a series of tests using standard $Pb(NO_3)_2$ solution in amounts representing 0.8 to 2.0 per cent Pb in a 25-mg paint sample. It is apparent that at temperatures higher than 70°F, lead would not be detected if present in amounts less than 1.5 per cent. Routinely, the screening test is done at ambient temperature except that in extremely hot weather, tubes are cooled to about 60 to 65°F before KI addition.

Examination of Samples of Known Lead Content—Quantitative determination of lead was made by the dithizone method of 106 samples of paint scrapings collected from a variety of sources such as paint manufacturers' test panels, painted toys, and liquid paint. The screening method gave a negative result (less than 1 per cent Pb) on 71 samples ranging in lead content from 0.03 to 1.2 per cent. A positive test (more than 1 per cent Pb) was obtained on 35 samples containing 1.4 to 17 per cent lead. There were no false-positive or false-negative tests.

Enforcement Program—In the ten-year period, 1947 through 1956, before the screening test was available, an average of 200 samples of paint scrapings were tested for lead per year. The samples were collected almost exclusively in field investigation of the source of lead at the homes of children who were cases of lead poisoning or showed abnormal lead absorption as revealed by the blood lead laboratory service.[1] Samples were tested largely by a chromate semiquantitative method.

The development of the rapid screening method for lead in paint enabled the Baltimore City Health Department's Lead Paint Poisoning Prevention Committee[10] to embark on a survey aimed at prevention of this malady. In 1957, more than 1,800 samples were collected by Health Department sanitarians and housing inspectors of the Code Enforcement Section of the Baltimore Urban Renewal and Housing Agency who inspected homes in 100 census tract blocks of a blighted area of the inner city, and by public health nurses who visited homes of an estimated 3,000 families enrolled in the City Health Department's Medical Care Program for indigent persons which housed children under three years of age. More than 1,000 of the paint samples, or approximately 56 per cent, were positive for lead. With the new test procedure, sampling now became more extensive. In 1958, positive lead

findings were obtained on 54 per cent of more than 2,200 samples examined. This year (1959), almost 3,500 samples of paint scrapings have been examined and 53 per cent showed significant amounts of lead. The samples consisted principally of paint scrapings, flakes, or chips of paint from interior woodwork, walls, and window sills. Public health nurses, sanitarians, housing inspectors, building inspection personnel, all contributed to the total. In addition, the Inspection and Code Enforcement Section of the Baltimore Urban Renewal and Housing Agency routinely uses the screening test as field equipment.

The Baltimore City Health Department is making every effort to prevent lead paint poisoning. Notices for the removal of the lead-bearing paint are sent to the owner of the dwelling unit. During the past three years, notices were issued involving approximately 1,600 dwelling units. Invariably, compliance was obtained; in a few instances, landlords were brought to the local Housing Court. If the situation involves a case of lead poisoning, the family is separated from the paint as promptly as possible, either by removal of the paint or by moving the family from the dwelling which is posted by the commissioner of health under order to vacate pursuant to the City Ordinance on the Hygiene of Housing because it was found to be unfit for human habitation and dangerous to life and health.[11] More recently, the preventive program was extended to include home visits and the issuance of notices for the removal of lead-containing paint at the homes of all children registered at the well baby clinic of the Druid Health District which serves an area with a high incidence of lead paint poisoning. This is designed to separate the children from the lead paint before they get sick.[12]

Conclusion

In order to prevent lead paint poisoning in children caused by ingesting paint from surfaces coated with paint containing lead, public health authorities are requiring warning labels on paint with lead in excess of 1 per cent, they are prohibiting the interior painting of dwelling units with such paint, and they are ordering the removal of paint containing lead where it presents a hazard to young children. A simple and inexpensive procedure is described for rapidly screening paint scrapings at the 1 per cent level to determine compliance with these regulations.

REFERENCES

1. Williams, Huntington; Kaplan, Emanuel; Couchman, Charles E.; and Sayers, R. R. Lead Poisoning in Young Children. Pub. Health Rep. 67:230–236 (Mar.), 1952.
2. U. S. Department of Health, Education, and Welfare. The Recognition of Lead Poisoning in the Child. Pub. Health Service Publ. No. 620, 1958.
3. Byers, R. K. Lead Poisoning: Review of the Literature and Report on 45 Cases. Pediatrics 23:585–603 (Mar.), 1959.
4. National Clearinghouse for Poison Control Centers. Lead Poisoning in Young Children: Diagnostic Criteria. Washington, D. C.: U. S. Department of Health, Education, and Welfare (May), 1959.
5. ————. Baltimore Health News 35:57–59 (Aug.), 1958.
6. National Paint, Varnish, and Lacquer Association, Inc. Labeling Laws and Regulations. Washington, D. C., 1953.
7. American Standard Specifications to Minimize Hazards to Children from Residual Surface Coating Materials. New York, N. Y.: American Standards Association, 1955.
8. Westgate, M. M.; Shurts, R. B.; and Adams, E. F. Determination of Lead in Paints at the One Per cent Level. Scientific Section, Circ. 773. Washington, D. C.: National Paint, Varnish, and Lacquer Association, Inc. (May), 1956.
9. Felicione, Frank. Personal communication to the author.
10. ————. Baltimore Health News 34:125 (Feb.), 1957.
11. ————. Ibid. 36:120 (Apr.-May), 1959.
12. ————. Ibid. 37:11 (Feb.), 1960.

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This paper was presented before the Laboratory Section of the American Public Health Association at the Eighty-Seventh Annual Meeting in Atlantic City, N. J., October 20, 1959.

Various epidemiologic studies of cardiovascular diseases use dietary assessment to determine the relation of dietary patterns to differential risk of being affected by a specific disease. This paper reviews such methods and outlines problem areas in the conduct of these studies.

METHODS OF DIETARY ASSESSMENT IN CURRENT EPIDEMIOLOGIC STUDIES OF CARDIOVASCULAR DISEASES

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CARDIOVASCULAR diseases cause more than half of all deaths in our population and are responsible for a large proportion of all illnesses and disability. Clinical observation of patients, experimental studies in the laboratory, and epidemiologic studies in population groups all suggest a relationship between diet and the occurrence of cardiovascular disease.

Coronary heart disease, which is responsible for about half of the cardiovascular disease deaths, takes a very heavy toll[1] among males during their most productive decades. Some investigators consider the proportion of calories derived from fat to be of major importance in the etiology of this disease. Others consider the ratio of saturated to unsaturated fat calories in the diet to be of greater significance. Still others suspect other nutrients, or metabolic disturbances which result in utilization of various foods in abnormal ways.

Diet also is considered of etiologic importance in hypertension, congenital heart disease, rheumatic heart disease, and cerebral vascular disease resulting in "stroke."

The relationship of diet to the occurrence of cardiovascular disease has added a new dimension to the field of nutrition—quite different from the traditional teaching of normal nutrition and of guiding diet therapy—and demands new approaches, new methods, and technics. This report describes some methods of dietary assessment currently being used and discusses certain problems of design and measurement.

Objectives of Dietary Assessment

The pathological processes involved in most cardiovascular diseases develop over a long period of time. Coronary heart disease effectively illustrates this time-course. The atherosclerotic changes in coronary vessels are known to occur at every age, but clinical manifestations may appear only after several decades, or perhaps never because of intervention of death from some other cause. To determine what extent the disease process is affected by diet, or by other factors in the individual's environment, the most productive study of the influence of these factors would cover the entire period during which the influence is exerted.

Ideally, the life-time nutritional his-

tory of an individual would be assessed to evaluate the relationship of diet to coronary heart disease. This being impracticable, only the individual's eating pattern of the present and immediate past has been studied. The degree to which such short-term coverage reflects usual life-time food consumption is not known. Acknowledging this limitation, an objective of current epidemiologic study of coronary heart disease is to test specific hypotheses about diet and disease (for example, that the occurrence of the disease is related significantly to fat intake).

Another objective is the study of associations between diet and disease without a specific dietary hypothesis. This approach offers opportunity to search for associations between dietary factors which may not have been suspected, or—if suspected—not measured. Once comprehensive diet information has been recorded, then components to be examined for relationship to the disease can be selected while data on those of less immediate interest remain available for study.

Epidemiologic Methods

Three types of comparison currently are in use: the snapshot, the flash-back, and the motion-picture methods. In snapshot studies, a population is divided at one point in time into its disease group and disease-free group, and for the same point in time the diets of the two groups are assessed in order to relate the prevalence of disease to dietary patterns. Flash-back studies contrast the disease group and the disease-free group in terms of dietary patterns that prevailed over a previous period. Motion-picture studies start with a group with certain dietary habits and a group without, and follow the two groups into future time by serial observations for the development of disease. Regardless of the type of observation—snapshot, flash-back or motion-picture—standardized measurements and accurate classifications are essential. The dietary status of individuals must be determined without reference to disease status.

A variety of populations are being observed in this country in search of associations between dietary patterns and cardiovascular disease. Approximate populations usually are chosen to conform with the need of the study objectives, and include (a) groups in institutions, (b) hospital patients, (c) medical clinic outpatients, and (d) groups from the population-at-large.

Late in 1958 and early in 1959 the National Heart Institute sponsored a review of 21 population studies of arteriosclerotic and hypertensive heart diseases.[2] These studies dealt with the measurement of a series of host and environmental characteristics as they related to disease. The characteristics included diet, occupation, body build, psychic stress, physical stress, lung function, blood clotting, and endocrine factors. Diet was a factor of major interest; ten of the 21 studies had included dietary assessment in their protocols and seven others proposed to do so.

Examples from Current Studies

The Nutrition History—The study of coronary heart disease among men in rural North Dakota[3] had a major interest in comparing diets of coronary patients with diets of a control group. Each man's usual food practices over a one-month period were studied. Quantity and quality of fat in the diet were of special interest. The food habits of area residents were considered in constructing the interview schedule. A pretest showed that interviewing hospitalized patients was not feasible, so all interviews were held after patients returned home. In many instances six months elapsed between the heart attack and the interview. Despite this

time lapse, the usual dietary intake for the month prior to the illness was studied. Each man was interviewed about his own diet. For coronary patients who did not survive, the wife or other next of kin provided information.

The diet interview began with questions about a typical day's meal pattern, followed by questions about consumption of each item on a list of 135 foods. For each food item eaten during the month, the respondent was asked how often he ate the food, the usual size of serving, and the type of fat used in preparation.

The nutritionist discovered that questions about a typical day's meal pattern helped explain the purpose of the interview and established rapport with the respondent. Information gained was helpful as a rough check on answers to questions about the use of foods on the detailed list.

The sequence of foods in the detailed (or cross-check) list affected the completeness and accuracy of reporting. Respondents found it easier to recall specific information about vegetables, bread, beverages, and desserts when asked about meats first.

Although the project was planned as a retrospective (flash-back) study of the diets of cases and controls, it is expected that the controls will be followed prospectively (motion-picture) to determine the occurrence of disease and to relate this to the dietary and other characteristics studied at the outset.

Most current epidemiologic studies of cardiovascular diseases that assess diet use a detailed nutrition history. Analysis of past eating habits reported in terms of average daily intake seems to be the only present method being applied in searching for any association between diet and cardiovascular disease.

A project of the motion-picture type at an industrial plant in Chicago[4] is concerned with annual observations on 2,000 employees. Those known to have cardiovascular disease at the outset are excluded. Each individual is characterized by age, occupation, body build, physical activity, personality characteristics, and dietary habits. Association between these attributes and cardiovascular disease is being sought. The diet history method is used, with three nutritionists interviewing employees during their work day. Annual diet interviews are being scheduled to reflect seasonal differences in the diet of each employee. Foods peculiar to the ethnic groups represented in this industrial population are included in the detailed list.

In order to establish mutually understood standards for size of servings, nutritionists borrowed china and glassware from the plant cafeteria where most of the men eat their noon meal. These utensils plus colored pictures of standard food portions help the men describe the amount of each food or beverage usually consumed.

A simple test is being used to estimate each man's salt intake. Three samples of bouillon are tasted, one containing no salt, the second a moderate amount and the third a larger amount. Each man is asked to rate them according to his preference. The value of this test and the significance of salt intake in relation to the development of cardiovascular diseases remain to be determined.

Another group of investigators[5] are interested in the effect on serum cholesterol levels of a naturally selected diet low in animal products. These workers are comparing age-specific serum cholesterol levels of a selected number of male Seventh Day Adventists with a similar group of Baptists. Both groups comprise hospitalized patients.

While the two groups have many similarities, such as probable abstinence from smoking and alcohol, the striking difference between them is in diet pattern.

Initial interviews show that many of the Adventists, who adhere to a vegetarian diet, use foods such as gluten, nuts, and soya milk as substitutes for animal products, and eat only those packaged foods made with vegetable shortening.

Nutrition Questionnaire—A different dietary approach is being applied in a long-term epidemiologic study[6,7] of coronary heart disease and hypertension among 1,600 male government employees in a northern state.

A self-administered questionnaire is being used, since the majority of participants are well educated and are willing to complete a lengthy form. Each man has an initial interview with a nutritionist, who takes a 24-hour diet recall and a typical day's eating pattern. She then briefs him on how to complete the questionnaire at home with his wife's help if necessary. It takes the participant about two hours to complete the questionnaire, which attempts to secure the amounts, kinds, and frequencies of foods eaten during the past month. The nutritionist obtains any information needed for clarification by telephone or a second interview.

Diet Diary (Repetitive Diet Record)—In another "motion-picture" project, two religious populations are being studied—one that follows a lacto-ovo-vegetable diet and the other a typical American diet.[8]

The repetitive diet record technic was used because a male nutritionist was unavailable. The physician in charge of the study, who served as liaison between the groups and the nutritionist, obtained food samples and the size of all ladles, bowls, and mugs used in serving food. Standard soup spoons were supplied to provide a uniform measure for self-service of sugar, jelly, and similar foods.

Daily records were complemented by instructions on keeping diet records (illustrated with food models) and the cook's record of food prepared and eaten. Since the diet in both monasteries was affected by seasonal variation and religious practices, allowances were made for fast, feast, and regular days.

Experimental Dietary Change—Several studies are in progress that employ methods recognized as experimental epidemiology. In these studies, persons presumed to be prime candidates for coronary disease are persuaded to change their diet habits. Their subsequent disease experience is followed and compared with that of matched controls who continue to eat their customary diet.

Each of these studies differs somewhat in design, conduct, and subjects studied. For example, in one study[9] participants without evidence of coronary disease but with hypercholesterolemia, hypertension, or obesity are included. In another study,[10] the subjects include men who have survived a coronary attack and men without coronary disease but the same "high risk" factors.

In these studies the diet prescribed contains a reduced amount of fat and a high ratio of unsaturated to saturated fats. These diets are adequate nutritionally.

These dietary studies have four common goals: First, to establish a baseline of the subjects' diets prior to modification; second, to motivate and instruct the individuals to follow a prescribed diet; third, to measure adherence to the diet by systematic follow-up; and fourth, to develop pertinent education aids.

A short-term measure of results will come from body weight, serum cholesterol level, and blood pressure before and after diet modification. A long-term measure will compare the incidence of coronary heart disease in the group with the modified diet with that in the controls.

Other Methods for Collecting Diet Information — Three additional methods for collecting diet information have been used in population studies. In one, a week's food record was kept by volun-

teers from business and professional groups.[11] Trained interviewers gave detailed instructions about weighing and measuring foods and checked on diary records throughout the week.

In other studies food consumption figures and mortality rates of cardiovascular disease for the United States have been contrasted with those of other countries.[12] Such studies may uncover clues and point to ethnic and cultural differences among people.

Such groups as American Indians[13] and Eskimos,[14] whose dietary patterns differ from the typical American diet, are under study. Both anthropologists and nutritionists have observed family diet patterns and collected samples of native foods for laboratory analysis. These data may lead to more specific epidemiologic studies.

Design and Measurement Problems

When the study is concerned with the relationship between dietary intake and cardiovascular disease, measurements of diet on both a disease group and a disease-free group are requisite to a solution. A study population should be chosen in which the two groups are homogeneous in all pertinent respects save the disease under study, and then any difference in their dietary pattern should be sought. Alternatively, where the groups are not homogeneous, statistical adjustments should be made for any factor that would bias results. (For example, obesity is thought to increase the risk of developing coronary heart disease and must be accounted for in testing a dietary hypothesis.) Moreover, the disease and disease-free groups should be chosen from a larger population that can be defined and described so that the results of study can be generalized to other populations.

Precise measurements should be made of both the diet and the existence of disease, and the sensitivity and specificity of measurements should be demonstrated. The following exemplify these needs:

1. Accurate qualitative and quantitative technics should be used in measuring particular food components ingested.
2. The best available methods to diagnose specific cardiovascular diseases should be used.
3. Uncertainties in diagnosis and variations in dietary intake may necessitate classification by gradient scales rather than by clear-cut designations of "presence" or "absence" of dietary or disease characteristics.
4. Evaluation of each individual's diet is necessary, as is the evaluation of each individual's cardiovascular status. The findings from these evaluations must be in terms of associations between dietary patterns and disease as determined collectively by grouping these individuals.

When the results of study indicate a statistical association between a dietary component and a cardiovascular disease, the investigator must show the specificity, as contrasted with the generality of the finding. That is, the results must be tested to show that a specific dietary factor, and not other or all dietary factors, correlate with the disease; and that a specific cardiovascular disease, rather than other or all diseases, correlates with the dietary component. True causal relationship must be distinguished from mere statistical association. This may be accomplished through collection of collateral data and through repetition of the observations, preferably by different study methods in different populations and by different observers.

Special problems are confronted in the need to assess quantitative differences between the opposing physiological function of food utilization and food egestion. For example, the quantities of type-specific dietary fats that are (a) eaten, (b) retained, and (c) excreted may have to be differentiated—a kind of "food balance sheet" for an individual. Presumably, consumed fats that are excreted unchanged in feces would have little significance for coronary heart disease. In contrast, a gain in weight

through fat storage, which may include deposits in atheromatous plaques of coronary vessels, may be of extreme importance in a study of type of fats ingested and coronary heart disease. In fact, total caloric intake as it leads to weight gain deserves attention.

Epidemiologic studies usually search for associations between a disease and a variety of personal and environmental factors rather than a single factor—diet, occupation, physical activity, smoking, emotional stress, and so forth. Each such factor involves methodological problems of measurement.

Summary

Methods being used in dietary assessment in several epidemiologic studies of cardiovascular diseases have been reviewed. These studies aim to determine whether persons with a certain dietary pattern experience a different risk of a specific cardiovascular disease than do persons with other dietary habits. Nutritionists are assisting in the design of studies, the collection of data, and in the verification of information. Dietary observations are being made by means of history-taking, self-administered questionnaire, and diary-keeping. In some studies, diets are altered to observe any resulting effect on cardiovascular morbidity or mortality.

Based on existing knowledge concerning causation of cardiovascular diseases, broad inquiry is made into associations between diet and disease. Comprehensive diet information is recorded and once general associations have been demonstrated, individual dietary components and dietary patterns can be examined for specific relationship to disease.

Certain problem areas have been outlined in conducting epidemiologic studies and in analyzing their results. It is expected, however, that such studies will add to clinical and laboratory knowledge in demonstrating any role that dietary habits play in causation of cardiovascular diseases.

REFERENCES

1. U. S. Department of Health, Education, and Welfare, PHS, National Office of Vital Statistics, Mortality from Selected Causes by Age, Race, and Sex: United States, 1957. Vital Statistics—Special Rep., National Summaries 50:5 (Apr. 24), 1959.
2. American Heart Association. Epidemiology of Cardiovascular Diseases: Methodology. A.J.P.H. (Part 2) 50,10:1-124 (Oct.), 1960.
3. Zukel, William J.; Lewis, Robert H.; Enterline, Philip E.; Painter, Robert C.; Ralston, Lloyd S.; Fawcett, Robert M.; Meredith, Alla P.; and Peterson, Beatrice. A Short-Term Community Study of the Epidemiology of Coronary Heart Disease. A.J.P.H. 49,12:1630–1639 (Dec.), 1959.
4. Paul, Ogleshy. University of Illinois College of Medicine. Personal communication.
5. Cantoni, Marjorie E. Heart Disease Control Program, U. S. Public Health Service. Unpublished data.
6. Browe, John. New York State Department of Health. Personal communication.
7. Hilleboe, H. E.; James, G.; and Doyle, Joseph T. Cardiovascular Health Center I, Project Design for Public Health Research. A.J.P.H. 44,7:851–863 (July), 1954.
8. Goodloe, Mary H.; Quinlan, Carroll B.; and Barrow, J. Gordon. A Diet Record Technique. Pub. Health Rep. 74:298–301 (Apr.), 1959.
9. Stamler, Jeremiah. Heart Disease Control Program, Chicago Board of Health. Personal communication.
10. Jolliffe, Norman; Rinzler, Seymour H.; and Archer, Morton. The Anti-Coronary Club: Including a Discussion of the Effects of a Prudent Diet on the Serum Cholesterol Level of Middle-Aged Men. Am. J. Clin. Nutrition 7:451–462 (July-Aug.), 1959.
11. Keys, Ancel. Diet and the Serum Cholesterol in Man: Lack of Effect of Dietary Cholesterol. J. Nutrition 59,1:39–56 (May), 1956.
12. Keys, Ancel. Atherosclerosis: A Problem in Newer Public Health. J. Mount Sinai Hosp. 20:118–139 (July-Aug.), 1953.
13. McDermott, Walsh; Deuschle, Kurt; Adair, John; Fulmer, Hugh; and Loughlin, Bernice. Introducing Modern Medicine in a Navajo Community. Science 131,3396:280–287 (Jan. 29), 1960.
14. Heller, Christine. Arctic Health Research Center, Anchorage, Alaska. Personal communication.

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This paper was presented before the Food and Nutrition Section of the American Public Health Association at the Eighty-Seventh Annual Meeting, Atlantic City, N. J., October 19, 1959.

The popularity of precooked, ready-to-serve foods as well as the use of various devices for dispensing and vending foods have tended to complicate the prevention of food-borne diseases. The studies presented here deal with the behavior microorganisms under refrigeration and under warm holding temperatures.

TIME-TEMPERATURE EFFECTS ON SALMONELLAE AND STAPHYLOCOCCI IN FOODS

I. BEHAVIOR IN REFRIGERATED FOODS

Robert Angelotti, Ph.D.; Milton J. Foter, Ph.D.; and Keith H. Lewis, Ph.D.

UNLESS perishable foods are refrigerated properly or otherwise preserved from the time of harvest to their final preparation for table service, they may support the growth of food poisoning and other infectious microorganisms that have inadvertently contaminated the food. The popularity of precooked, ready-to-serve foods, the increased use of automatic vending machines for dispensing perishable meals, and the acceptance of convenience foods, in general, have complicated the time-temperature control problems facing public health workers who are engaged in the prevention of food-borne diseases.* The trend to prolonged holding of nonsterile foods has accentuated the importance of refrigerated storage at temperatures which inhibit the growth of pathogenic bacteria.

Epidemiological investigation of food-borne infections and intoxications usually shows that the foods in question were contaminated and maintained at temperatures favorable to multiplication for periods which would allow extensive growth of the microorganisms involved. Thus, time and temperature are found to be interdependent factors requiring rigid control in order to prevent the transmission of disease by food. Infectious and toxigenic microorganisms, when present, may survive inadequate heat treatments and multiply rapidly if the foods are held at temperatures suitable for growth.

Early investigations revealed that cold was bacteriostatic rather than bactericidal.[1-3] Because of this, subsequent attention was given to determining those temperatures above freezing at which foods might be stored, not only to prolong shelf life, but also to prevent the growth of food-poisoning microorganisms. Particular interest was devoted to determining the temperatures neces-

* The Public Health Service is now developing a new food service sanitation manual to replace the "Ordinance and Code Regulating Eating and Drinking Establishments—1943 Recommendations of the Public Health Service." The results of the studies presented in this paper will be considered by the Service, along with other available information, in determining the storage temperatures for perishable foods to be recommended in the new manual.

sary to prevent the growth and toxin production of Clostridium botulinum. Numerous studies were conducted with various foods and temperatures, the results were in good agreement and showed that temperatures of 50°F, or less, were required to prevent the formation of botulinus toxin in foods.[4-9]

Later research conducted to determine the temperatures required for inhibiting the multiplication of food-poisoning organisms other than Cl.botulinum, revealed that temperatures lower than 50°F were required. As early as 1927, it was shown that several salmonellae grew luxuriantly in various foods held at ice-box temperatures ranging from 50°F to 59°F.[10] Subsequent studies[8,9] showed that temperatures of 41°F or below were required to totally prevent the growth of salmonellae in foods.

Evidence is also available that temperatures of less than 50°F are necessary to prevent the development of staphylococci in foods. Slow growth of enterotoxigenic staphylococci in ham, tongue, and chicken sandwiches held at 46°F has been reported,[11] as well as growth at temperatures above 40°F of enterotoxic staphylococci which survived in frozen-pack vegetables.[12] Another study indicated that as much as an 100-fold increase in numbers of staphylococci can occur in cream pie filling stored at 41°F.[13]

More recent studies on the growth response of other organisms in refrigerated foods showed that bacterial counts on Escherichia coli in cream sauce and beef broth were not stabilized until the internal temperature of the foods reached 42°F.[14] Growth studies made over a 30-day period on chicken gravy inoculated with cultures of E. coli, Streptococcus fecalis, Staphylococcus aureus, and Pseudomonas fluorescens showed that no growth occurred at storage temperatures of 32°F and 41°F, but did occur in all samples held at 50°F.[15] The present acceptance of 50°F as the maximum tolerable limit for refrigerating foods is probably related to the inability of Cl.botulinum to produce toxin at this temperature and to the inability of the older ice-cooled refrigerators to maintain temperatures much below 50°F. An additional factor which contributes to its acceptance is that storage of perishable foods for one day or less at this temperature does not give rise to food-poisoning episodes. Present recommendations and practices usually require that perishable foods be maintained at 50°F, or below.[16-18] However, based on the information available, 50°F may not prevent the growth of salmonellae and staphylococci in highly perishable foods that are held for extended periods. Although these organisms are the most commonly reported causes of food-borne illness, time-temperature data on their behavior in perishable foods have not been established on a basis comparable to that for pasteurization of milk or for canning. Requirements for refrigeration, cooking, and warm holding of these foods need to be established. This paper reports that portion of such a study which is concerned with the growth responses of salmonellae and staphylococci below 50°F.

Methods

Preparation of Foods

Custard, ham salad, and chicken à la king were selected as foods representative of the types often incriminated in cases of food poisoning. The foods were prepared according to the following recipes:

Custard

	Approx.	
Corn starch	(8 tbsp)	40 gm
Salt (NaCl)	(½ tsp)	2 gm
Sugar (sucrose)	(1½ cups)	322 gm
Milk	(1 qt)	946 ml
Egg yolks, lightly beaten		4
Egg whites, stiffly beaten		4
Vanilla	(3 tsp)	14.7 ml

pH 6.8

Mix dry ingredients together. Add one quart milk and four lightly beaten egg yolks. Cook in double boiler until thick. Add stiffly beaten egg whites from four eggs and three teaspoons of vanilla and fold in gently.

Ham Salad

	Approx.	
Cooked ham	(1 lb)	454.0 gm
Sweet pickles	(1/5 cup)	93.5 gm
Cooked pimentos	(1/10 cup)	49.5 gm
Raw green pepper	(1/5 cup)	77.0 gm
Salad dressing	(1/5 cup)	75.0 gm
Water		150.0 ml
Hard boiled eggs		2

pH 5.6

Place all ingredients in hopper of meat grinder and pass through the grinder two times. Add water to ground product and mix thoroughly.

Chicken a la King

	Approx.	
Butter	(3 tbsp)	40.0 gm
Flour	(3 tbsp)	30.0 gm
Milk	(2 cups)	473.0 ml
Cooked chicken	(1 cup)	227.0 gm
Cooked pimentos	(½ cup)	113.5 gm
Raw green peppers	(¼ cup)	113.5 gm
Salt	(½ tsp)	2.0 gm
Black ground pepper	Pinch	0.25 gm
Water		75.0 ml

pH 6.2

Mix flour, butter, and milk together and heat in double boiler until thick. Place remaining ingredients in hopper of meat grinder and pass through grinder twice. Add ground ingredients to white sauce, add water, and mix thoroughly.

Following their preparation, the three types of foods were weighed out in 50 gm aliquots which were placed in 2 oz screw-cap jars. After filling, the jars were tightly closed and the foods were cooked and sterilized as follows: ham salad and chicken à la king at 252°F for 15 minutes, custard at 239°F for 15 minutes. The pH readings of the foods after cooking were 5.6, 6.2, and 6.6, respectively. After cooling, the screw cap on each jar was covered with a 5-in. × 5-in. square of "dental dam" rubber sheeting* held in place by means of a rubber band wound tightly over the sheeting below the bottom thread of the jar. This prevented seepage of water into the jars. The jars of food of each type were then totally submerged in constant temperature water baths previously adjusted by means of a Bureau of Standards thermometer. The baths maintained the following temperatures (plus or minus 0.9°F): 95°F, 50°F, 48°F, 46°F, 44°F, 42°F, and 40°F. Dual scale Centigrade-Fahrenheit thermometers, checked for accuracy against the Bureau of Standards thermometer, were maintained in the baths throughout the experiments.

Test Cultures

The selection of test organisms for this study was based on previous investigations conducted in our laboratories to determine the response of eight strains of enterotoxigenic Staph. aureus and seven antigenically distinct Salmonella species in brain heart infusion broth to temperatures ranging from 41° to 158°F. Salmonella senftenberg 775W, S.enteritidis and S.manhattan, were chosen because they displayed high, medium, and low heat resistance, respectively, as well as variations in the ability to survive cold temperatures.

Very little difference in heat resistance was observed among the staphylococci; however, Staph. aureus Ms149 displayed a slightly greater resistance than the other seven strains. Of the remaining strains, MF159 and 196E were selected for use in that they characterized the general temperature responses of the staphylococci to both high and low temperatures.

Stock cultures of these six organisms were maintained by daily transfer on nutrient agar slants incubated at 95°F. To prepare the inocula for a given ex-

* Hygienic dental dam, half-yard length, 5-in. width, medium grade, manufactured by Hygienic Dental Manufacturing Company, Akron 10, Ohio.

periment, the growth from a 24-hour slant was washed off with sterile phosphate buffered distilled water,[19] shaken vigorously in a sterile colorimeter tube to break up clumps, and adjusted to the desired concentration. The Salmonella suspensions were adjusted to 18 per cent transmittance at 620 millimicrons on a Coleman Junior Spectrophotometer and the staphylococcal suspensions to 10 per cent transmittance. Following adjustment, the three Salmonella suspensions were pooled together to make a mixed culture of the three species. The staphylococci were similarly pooled to form a second mixed culture. Each mixed culture yielded approximately 5,000,000,000 viable cells per ml by plate count. Mixed cultures were used for inocula, because it was felt that suspensions containing organisms of varying temperature responses would represent more closely the behavior of salmonellae and staphylococci in general than would be possible by the use of pure cultures. In addition, the use of multiple strains minimized the possibility of a given food providing a single strain with an unknown nutrient which might affect its response to temperature.

Examination of Inoculated Foods

One-tenth-ml aliquots of each mixed-culture suspension were inoculated into duplicate jars of each of the three foods adjusted to the desired test temperatures. This volume of suspension, added to the 50 gm of food in each jar, resulted in a final inoculum of approximately 10,000,000 cells per gram. After inoculation, the screw caps were replaced and the jars were again covered with "dental dam." The inoculated jars were then shaken vigorously by hand for 50 return strokes to distribute the inoculum throughout the mass of food. After shaking, the jars were once again totally submerged in the water baths and permitted to incubate for five days. At 24-hour intervals, plate counts of the inoculated foods were performed by removing 10 gm of food, grinding it in a sterile Waring Blendor cup with 90 ml of sterile distilled water for two minutes at slow speed, and preparing appropriate tenfold dilutions from these blends in sterile phosphate buffered distilled water.[19] Duplicate plates of each dilution were poured, employing Bacto plate count agar, and the plates were incubated 24 hours at 95°F.

One uninoculated jar of food also was incubated at each of the temperatures to serve as a "leak" control. These jars were sampled and plated similarly to the test jars.

To determine that the foods were sterile, individual jars of each were analyzed as follows: The total 50 grams of food from a single jar was dropped into 430 ml of sterile distilled water in a Waring Blendor cup. The jar was rinsed with two additional sterile 10-ml rinses. These were also added to the cup. The resultant 1-10 dilution was blended two minutes at slow speed. A 10-ml aliquot of the blend was distributed among three Petri plates which were poured with Bacto plate count agar. The poured plates were incubated at 95°F for 24 hours.

To quantitate the number of organisms per gram initially present in the inoculated food samples, two additional jars of each food were inoculated with salmonellae and two with staphylococci. After shaking, the contents of each were dropped into a Waring Blendor cup containing 430 ml of sterile distilled water. The jars were rinsed with two 10-ml rinses which were also added to the cup. The resultant 1-10 dilution was blended two minutes at slow speed and plated as described for the test series.

Results

Significant differences were observed between the salmonellae and staphylococci in growth response as related to

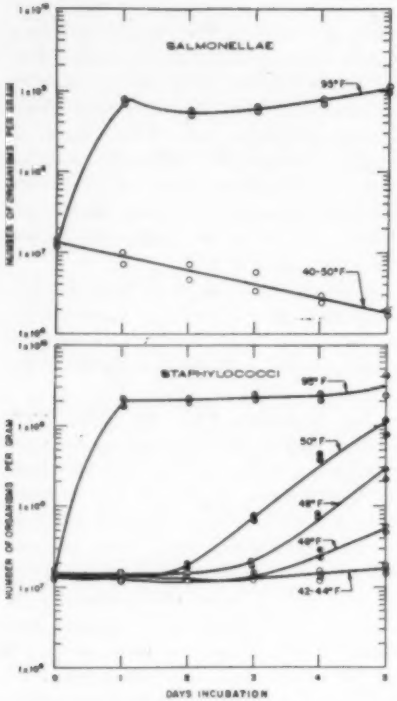

Figure 1—Growth of Salmonellae and Staphylococci in Custard Incubated at Various Temperatures

temperature and food menstruum. These differences are shown in Figures 1 through 3, which represent the individual growth curves of both groups of organisms at the various incubation temperatures and in the three food products. Each point on these curves represents the mean of duplicate plate counts obtained from each of the paired jars of food.

In custard (Figure 1), the staphylococci showed virtually no increase in numbers throughout five days of incubation at 40°F through 44°F. However, an increase was observed at the end of four days' incubation at 46°F and 48°F; and two days' incubation at 50°F with progressive increases throughout the remainder of the five-day period at these temperatures. The salmonellae underwent a gradual decline in numbers at all the temperatures from 40°F to 50°F. This decline was related to an inability of these organisms to reproduce in the custard at the low test temperatures, and not to an inhibitory property of the custard per se, for good growth of the salmonellae as well as the staphylococci occurred at 95°F.

In chicken à la king (Figure 2), the growth responses of the salmonellae and staphylococci to temperature again differed from each other. In addition, the temperatures at which growth was initiated and the final cellular concentration per gram differed from the values observed in custard. Neither group of organisms displayed any significant change in numbers of cells per gram throughout the five-day incubation period at 40°F or 42°F. However, at 44°F, increases were noted in both groups at the end of four days' incubation. At the end of the fifth day, increases of approximately 50,000,000 salmonellae and 10,000,000 staphylococci per gram were noted over the numbers present on the fourth day. At 46°F and 48°F, the salmonellae grew more rapidly than staphylococci and yielded considerably higher cellular concentrations. At 50°F both groups of organisms displayed good growth and the maximum stationary phase of growth was reached after four days' incubation. By way of comparison, a concentration of approximately 1,000,000,000 organisms per gram was attained in chicken à la king by both groups after 24 hours' incubation at 95°F, whereas four days' incubation was required to attain similar results at 50°F.

In ham salad (Figure 3), no significant increase in numbers of salmonellae or staphylococci occurred at 40°F through 50°F during five days' incuba-

tion. At all the low temperatures, the numbers of staphylococci decreased initially and then gradually returned to the level of the original inoculum by the end of five days. On the other hand, the salmonellae declined gradually in numbers throughout the five days. At 95°F, however, good growth of both groups was observed.

The time-temperature relationships affecting the behavior of salmonellae and staphyococci in the range of 40°F to 50°F are shown in Table 1.

Discussion

It is apparent from the data that the practice of storing perishable foods at a temperature of 50°F for more than one day may result in increases of the microbial populations. Because microbial growth occurs relatively slowly at 50°F; it is possible to store foods safely at this temperature for short periods, provided the foods are not grossly contaminated with toxigenic or infectious microorganisms. However, gradual multiplication of microorganisms at 50°F may shorten the time necessary for significant increases to occur if the food is later held at a warmer temperature. The data collected in this study and others reported in the literature indicate that growth of salmonellae, staphylococci and Cl.botulinum is prevented in perishable foods when the internal temperature is at or below 42°F.

The volume and type of container affect the rate at which foods cool down to temperatures that will inhibit bacterial growth. Though growth of the test organisms at 40°F and 42°F did not occur in food, even after five days' incubation, it must be recognized that an important contributing factor to this result was that the foods had been adjusted to these temperatures before inoculation and were not permitted to deviate from them throughout the experimental time limit. Foods should be cooled as rapidly as possible through the range of temperature at which microbial growth is possible to one at which growth ceases. The rate at which a food cools is related to the differential in temperature between it and the surrounding cooling medium, the type and volume of the food, and the size and shape of container in which it is placed. Objections have been raised to placing hot foods directly into the refrigerator without previous cooling to room temperature. With present mechanical refrigeration, it is fallacious to believe that prompt cooling of hot foods will cause "souring" or that a "sealing-in" of heat will occur due to the congealing of

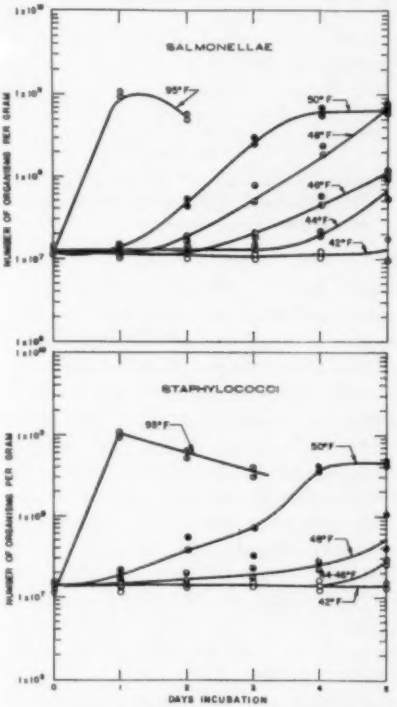

Figure 2—Growth of Salmonellae and Staphylococci in Chicken a la King Incubated at Various Temperatures

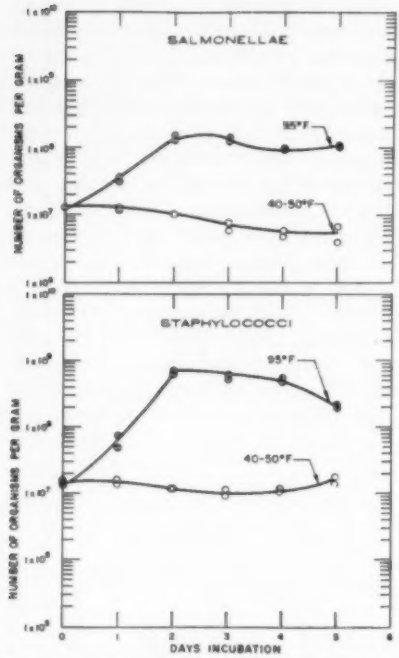

Figure 3—Growth of Salmonellae and Staphylococci in Ham Salad Incubated at Various Temperatures

outer layers. This belief probably originated when ice boxes were the only source of refrigeration and introduction of hot food caused the ice to melt and elevated the temperature of the box to a point favorable for growth. Recent investigations have shown that prompt refrigeration of hot foods resulted in faster internal cooling than did initial cooling to room temperature followed by refrigeration. It was also pointed out that the time refrigerated foods remained within the temperature growth range for food-poisoning bacteria was lessened by refrigeration of the food before its internal temperature dropped to 115°F.[20] In subsequent work by one of these investigators, data were presented which correlated food volume and container size with cooling rates. A difference of six hours was shown to be necessary to lower the temperature of a 100-serving portion of chicken salad in a deep container, as compared to the same volume distributed in four shallow bowls, each containing a 25-serving portion.[21]

The formulation of a food also may affect the survival or multiplication of microorganisms therein. For example, the ham salad used in this study was maintained for five days at 50°F with no over-all increase of either salmonellae or staphylococci. However, with ham salad prepared from other formulations, good growth of the test organisms might occur. Food poisoning attributable to ham salad is not uncommon. In 1956, an outbreak was reported in which 28 persons became ill within one and one-half to seven and one-half hours after ingesting ham salad, egg salad, or cream cheese sandwiches. Bacteriological examination of several sandwiches revealed the presence of coagulase-positive, hemolytic Staph. aureus.[22] A similar outbreak was reported recently in which 600 high school girls became ill within one to ten hours after eating ham salad sandwiches in the school cafeteria. Coagulase-positive Staph. aureus was

Table 1—Refrigeration Temperatures Preventing the Growth of Salmonellae and Staphylococci in Readily Perishable Cooked Foods

Storage Temperature in °F	Days of Food Storage Without Growth
50	1
48	2
46	3
44	4
42	5+
40	5+

The storage periods shown for the various temperatures represent the time intervals at which all the foods used in this study were stored without significant multiplication of salmonellae or staphylococci.

isolated from the ham salad in numbers in excess of 1,000,000 organisms per gram.[23] Though information relating to the temperatures at which these foods were held is not available, these outbreaks indicate that ham salad does support the growth of food-poisoning bacteria and requires strict sanitary control during preparation.

Thus, it is evident that a number of factors contribute to safe refrigerated storage of perishable foods. The formulation of recipes which result in an end product unfavorable for the growth of bacteria is important and may provide some degree of safety. For example, the incorporation into recipes of ingredients which increase the hydrogen ion concentration to the critical level of pH 4.5,[24,25] or the addition of certain amino acids[26,27] and preservatives[28] may be of value. However, until such time as recipes that depend upon formulation to safeguard against the development of food poisoning during storage are accepted for mass feeding operations, prompt and adequate refrigeration appears to be the best safety factor.

Summary

Mixed cultures of S.senftenberg 775W, S.enteritidis, S.manhattan, and mixed cultures of Staph.aureus 196E, Staph.aureus MF159, and Staph.aureus Ms149 were cultured in custard, chicken à la king, and ham salad for five days at 2°F intervals from 40°F to 50°F and at 95°F.

In custard, the staphylococci grew at temperatures of 44°F and above. The salmonellae underwent a gradual decrease in numbers at all temperatures from 40°F through 50°F.

In chicken à la king, growth of both salmonellae and staphylococci occurred at temperatures of 44°F and above.

In ham salad, no growth of either group of organisms occurred at 40°F through 50°F.

Good growth of both groups of organisms was observed in all three types of food incubated at 95°F.

The results indicate that the growth of salmonellae and staphylococci is prevented in perishable foods when the internal temperature is at or below 42°F.

II. BEHAVIOR AT WARM HOLDING TEMPERATURES

THE control of temperature during processing, storage, preparation, and serving of perishable foods is recognized to be the most dependable and practical measure for preventing food poisoning and improving keeping quality. However, there is a paucity of critical technical information on time-temperature relationships that may be employed directly in the formulation of regulations, manuals of operation, and guides for food-handling practices. As a result, ambiguity exists concerning the temperature conditions under which perishable foods may be held safely. Although highly perishable foods are commonly held at temperatures of 50°F or below and at 140°F or 150°F and above,[16-18] the length of time they may be held safely at these or intermediate temperatures is not well established. The critical temperatures for stopping bacterial multiplication during heating or cooling of large food masses also need to be determined for additional types of foods.

The "incubation danger zone" was first described by Jensen.[29] He pointed out the danger of holding foods in the

temperature range of 50°F to 120°F for periods of four to eight hours. Other investigators have reported upon the growth response of clostridia,[4-6,8] staphylococci, and salmonellae[8,13,30,31] in foods at temperatures within this range. As a result of studies reported earlier, it was found that salmonellae and staphylococci were capable of growing within five days or less at 44°F and above.[32]

The study reported here presents information on the response to temperature of salmonellae and staphylococci in foods held at warm temperatures (95°F to 120°F). The results of this study, together with those gathered previously, define the limits of the "incubation danger zone" for salmonellae and staphylococci in ham salad, chicken à la king, and custard, which represent types of food that are frequently implicated in disease outbreaks.

Methods

Preparation of Cultures

Salmonella senftenberg 775W, S.enteritidis, and S.manhattan and Staphylococcus aureus Ms149, Staph.aureus MF159, and Staph.aureus 196E were selected as test organisms on the basis of their response to temperature as reported previously.[32] Each of the test cultures was maintained as a stock in Bacto cooked meat medium stored at 68°F. At monthly intervals, the stocks were transferred to fresh tubes of cooked meat medium, incubated at 95°F for 24 hours, and then returned to storage at 68°F.

To prepare the inocula for a given experiment, the stock cultures were transferred to Bacto nutrient agar slants and incubated 24 hours at 95°F. Following incubation, the inocula were prepared as reported earlier.[32]

Preparation of Foods

Custard, ham salad, and chicken à la king were selected as foods representative of the types often incriminated in cases of food poisoning. They were prepared, distributed in 2-oz jars, and sterilized according to the procedure outlined formerly.[32] Following sterilization and cooling, each jar was placed in a separate vinyl plastic bag and suspended in a water bath in such a manner that the jar of food was completely submerged beneath the surface of the water. The end of the plastic bag was twisted and clamped in place along the edge of the water bath. This procedure prevented seepage of water into the jars of food, but insured that the contents of the jars were maintained at the bath temperature. The water baths were adjusted by means of a Bureau of Standards thermometer and maintained the following temperatures (plus or minus 0.18°F): 95°F, 112°F, 114°F, 116°F, 118°F, and 120°F.

Inoculation, Test Temperatures, and Bacteriological Examination

In each experiment, the response to temperature of either the salmonellae or staphylococci was determined for a given food at four temperatures simultaneously. One-tenth-ml aliquots of the pooled suspension of test organisms were inoculated into duplicate jars of the food which had been adjusted to bath temperature as described above. This volume of suspension added to the 50 gm of food in each jar resulted in a final inoculum of approximately 10,000,000 cells per gram. After inoculation, the screw caps were replaced and the jars shaken vigorously by hand for 50 return strokes to distribute the inoculum throughout the food mass. Following shaking, the jars were returned to the plastic bags and once again suspended in the water baths.

At six-hour intervals, duplicate jars of food were removed from each water bath and the contents transferred into a sterile Waring Blendor cup to which 430 ml of sterile, cold (45°F) phosphate

dilution water had been added.[19] The jar was rinsed with two additional 10-ml aliquots of the dilution water and these were also added to the blendor cup. The mixture was blended two minutes at slow speed and appropriate tenfold dilutions prepared from the blends in sterile phosphate dilution water.[19] Duplicate plates of each dilution were poured, employing Bacto plate count agar, and the plates were incubated at 95°F for 24 hours.

To determine quantitatively the number of organisms per gram in the food immediately after inoculation, two additional jars of food were inoculated as described. These jars of food were at room temperature at the time of inoculation and, immediately after shaking, were blended, plated out, and incubated as described above.

One uninoculated jar of food also was incubated in each of the water baths to serve as a "leak" control. At the end of the 24-hour incubation period, these jars were sampled and plated similarly to the test jars.

Results

The growth response of the salmonellae and staphylococci in the different foods at temperatures of 95°F, 112°F, 114°F, and 116°F are shown in Figures 4 through 6. In ham salad (Figure 4), both groups of organisms grew well at 95°F; however, a decrease in numbers of organisms proportionate to temperature occurred at all temperatures from 112°F to 120°F.

In chicken à la king (Figure 5), both the staphylococci and salmonellae displayed excellent growth at 95°F; however, notable differences were observed between the responses of the two groups at the remaining temperatures. The staphylococci grew well at 112°F, but died off at the higher temperatures. At 114°F, approximately 90 per cent reduction in numbers occurred after 12 hours; whereas, a similar reduction occurred at 116°F after six hours, and at 118°F and 120°F in less than six hours. The salmonellae grew at 112°F and 114°F, but underwent a gradual reduction to 60 per cent of the original inoculum after 24 hours at 116°F and 50 per cent at 118°F. At 120°F, the inoculum was reduced to 20 per cent of the original level after 24 hours.

In custard (Figure 6), both groups

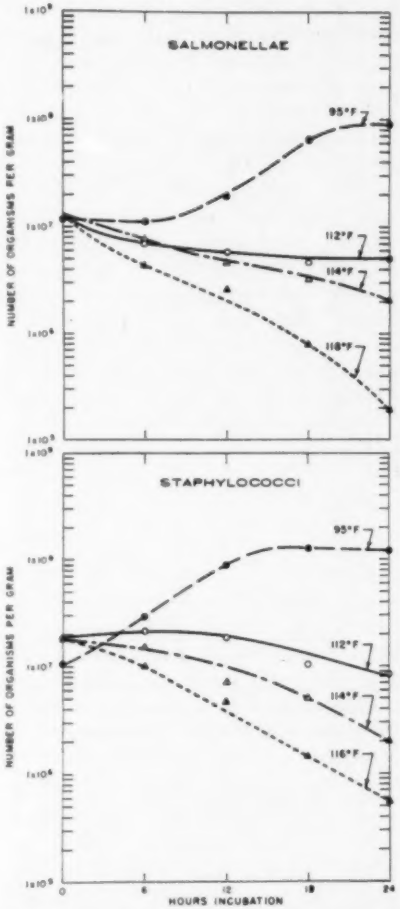

Figure 4—Growth of Salmonellae and Staphylococci in Ham Salad Incubated at Various Temperatures

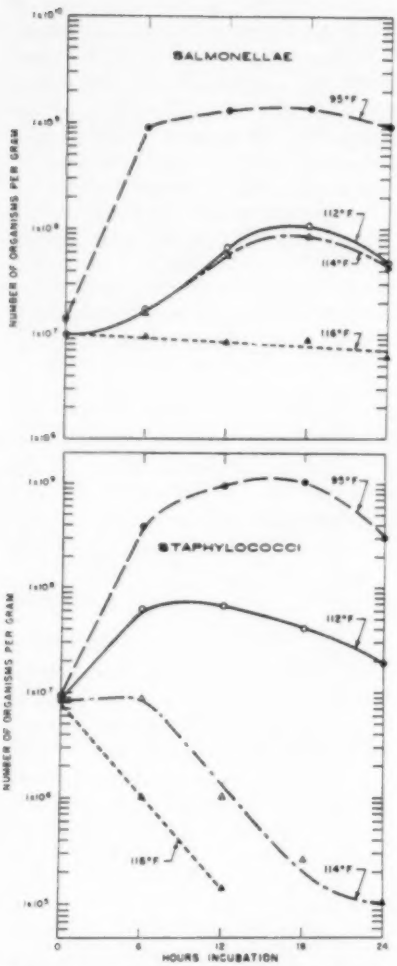

Figure 5—Growth of Salmonellae and Staphylococci in Chicken a la King Incubated at Various Temperatures

again displayed excellent growth at 95°F. The staphylococci grew well at 112°F, showed moderate growth at 114°F, and underwent a slight increase during the first 12 hours of incubation at 116°F followed by a gradual decline between 18 and 24 hours. At 118°F and 120°F, a 90 per cent reduction was observed after 24 and six hours, respectively. The salmonellae grew well at 112°F, displayed poor growth at 114°F, and increased slightly during the first six hours of incubation at 116°F followed by a gradual decline between 18 and 24 hours. At 118°F, essentially no change in numbers was observed throughout the 24-hour period, whereas a gradual decline was observed resulting in a 60 per cent reduction after 24 hours' incubation at 120°F.

Discussion

The results obtained in this study revealed that salmonellae and staphylococci are capable of growing in certain foods at temperatures up to 114°F; whereas, at 116°F, either death occurs, or the population density remains stabile during 24 hours of storage. Previous studies, in which the growth response of these organisms was measured in the same foods held at refrigeration temperature, showed that growth could occur at 44°F and above.[32]

The ubiquitous nature of these two groups of organisms enables them to gain entry into foods easily from both human and animal sources. The common occurrence of staphylococci on the skin and in the nasopharynx of man contributes to their frequent isolation from nonsterile foods. The prevalence of salmonellae in certain meat and poultry products provides an entry for these organisms into dishes prepared from them. Being vegetative organisms, neither group displays the heat resistance associated with bacterial endospores; consequently, they are easily eliminated from foods which receive less severe heat treatments than would be required for sterilization. However, after cooking and during the cooling process, the types of foods associated with staphylococcal and salmonellae food poisoning often require handling. Boning chicken or mincing ham for salads, fill-

ing puffs, eclairs, and so forth, are examples of this type of handling. Thus, foods which were free from these infectious or toxigenic organisms once again become contaminated. Though the level of contamination at this point is usually insufficient to produce gastroenteritis, the necessary level is rapidly attained when the conditions of time and temperature required for growth or toxin production are permitted to develop. It appears from the data reported here and that presented earlier[32] that salmonellae and staphylococci will multiply in the range of 44°F to 114°F, and that extensive growth can occur in a few hours at the warmer temperatures.

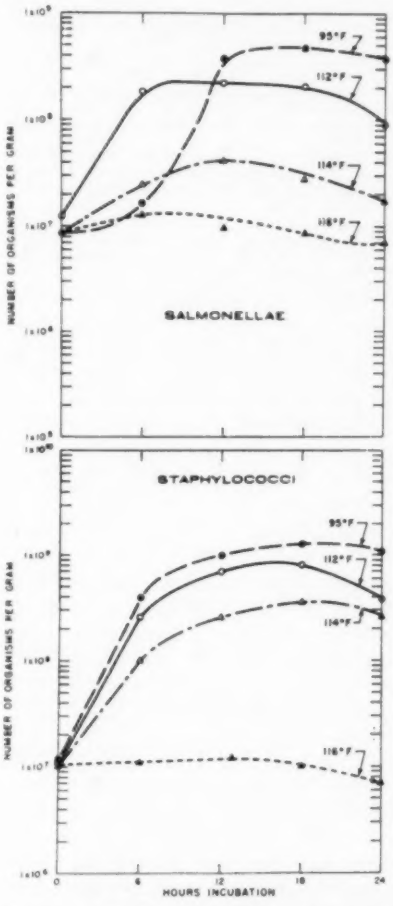

Figure 6—Growth of Salmonellae and Staphylococci in Custard Incubated at Various Temperatures

Observations were not made on the effect of a changing environmental temperature with time, as is done in "heat-up" and "cool-down" studies. However, with the knowledge of the relatively short generation time of bacteria under ideal conditions, and from the data presented by others[14,33,34] on cooling rates of large quantities of food, and of the growth of food-poisoning bacteria in such foods, maintaining the internal temperature of foods within the mid-range of the "incubation danger zone" for more than four hours must be regarded as a dangerous practice. The danger is reduced when foods are stored in small quantities and in containers which conduct heat well. Under such conditions, the internal temperature of the foods passes through the temperature range of 44°F — 114°F much more quickly than is possible with large quantities in nonconducting containers.

Summary

Mixed cultures of S.senftenberg 775W, S.enteritidis, S.manhattan, and Staph.aureus 196E, Staph.aureus Ms149, and Staph.aureus MF159 were cultured in custard, chicken à la king, and ham salad for 24 hours at 2°F intervals from 112°F to 120°F and at 95°F.

In custard, both groups of organisms grew at 114°F, but decreased in numbers at 116°F through 120°F.

In chicken à la king, the staphylococci grew at 112°F and were killed at all the higher temperatures. The salmonellae grew at 114°F, but were killed at 116°F and above.

In ham salad, both groups of organ-

isms decreased in numbers at temperatures of 112°F through 120°F.

Good growth of the test organisms in all three foods was observed at 95°F.

The results indicate that the temperature growth range for salmonellae and staphylococci in foods of the type studied is 44°F to 114°F; and that holding perishable foods in the mid-portion of this range for periods that permit growth of salmonellae and staphylococci is to be avoided.

REFERENCES

1. Macfadyen, A. On the Influence of the Temperature of Liquid Air on Bacteria. Proc. Roy. Soc. London B. 66:180, 1900.
2. Paul, T., and Prall, F. Die Wertbestimmung non Desinfectionsmitteln mit Staphylokakken die bei du Temperatur du Flussigne Luft anfbewahrt wurden. Arb. Reichagesundk. Ant. 26:73, 1907.
3. Haines, R. B. The Effect of Freezing on Bacteria. Proc. Roy. Soc. B. 124:451, 1938.
4. Edmondson, R.; Thom, C.; and Giltner, L. T. Experiments With Bacillus (Clostridium) botulinus Under Household Conditions. Am. Food J. 18:143, 1923.
5. Starin, W. A. Relationships of Incubation Temperature to Viability, Rate of Growth, and Toxin Production of Clostridium botulinum in Different Vegetables. J. Infect. Dis. 38:106, 1926.
6. Tanner, F. W., and Ogiesby, E. W. Influence of Temperature on Growth and Toxic Production by Clostridium botulinum. Food Research 1:481, 1936.
7. Tanner, F. W.; Beamer, P. R.; and Rickber, C. J. Further Studies on Development of Clostridium botulinum in Refrigerated Foods. Ibid. 5:323, 1940.
8. Prescott, S. C., and Geer, L. P. Observations on Food-Poisoning Organisms Under Refrigeration Conditions. Refrig. Eng. 32:211–212, 282–283, 1936.
9. Prescott, S. C., and Tanner, F. W. Microbiology in Relation to Food Preservation. Food Research 3:189, 1938.
10. Damon, S. R., and Leiter, L. W. The Possibility of Human Infection and Intoxication by Certain Organisms of the Salmonella Group. I. Rate and Extent of Growth and Physical Changes Produced in Foods by Bacillus suispestifer, Bacillus pestis vaciae, Bacillus sanguinarium, and Bacillus anatum. Am. J. Hyg. 7:27, 1957.
11. Kelly, F. C., and Dack, G. M. Experimental Staphylococcal Food Poisoning. A Study of the Growth of a Food-Poisoning Staphylococcus and the Production of an Enterotoxic Substance in Bread and Meat. A.J.P.H. 26:1077, 1936.
12. Jones, A. H., and Lockhead, A. G. Study of Micrococci Surviving in Frozen-Pack Vegetables and Their Enterotoxic Properties. Food Research 4:203, 1939.
13. Miller, W. A., and Smull, M. L. Efficiency of Cooling Practices in Preventing Growth of Micrococci. J. Am. Dietet. A. 31:469–473, 1955.
14. Longree, K., and White, J. C. Cooling Rates and Bacterial Growth in Food Prepared and Stored. I. Broth and White Sauce. Ibid. 31:124–232, 1955.
15. Kereluk, K., and Gunderson, M. F. A Preliminary Study on the Effect of Different Temperatures on the Growth of Various Bacteria Isolated from Frozen Chicken Meat Pies. Bact. Proc. 12:7, A3, 1959.
16. U. S. Public Health Service. Ordinance and Code Regulating Eating and Drinking Establishments. Recommendations of the Public Health Service. Washington, D. C.: Gov. Ptg. Office, PHS Publ. No. 37, 1943.
17. ————. The Vending of Foods and Beverages, A Sanitation Ordinance and Code. Recommendations of the Public Health Service. Washington, D. C.: Gov. Ptg. Office, PHS Publ. No. 546, 1957.
18. Food Sanitation in Commercial Establishments. California State Department of Health, 2151 Berkeley Way, Berkeley 4, Calif. Business Publ. No. 48, 1956.
19. Standard Methods for the Examination of Dairy Products (10th ed.), New York, N. Y.: American Public Health Association, 1953, p. 95.
20. Black, L. C., and Lewis, M. N. Effect on Bacterial Growth of Various Methods of Cooling Cooked Foods. J. Am. Dietet. A. 24:399, 1948.
21. Lewis, M. N.; Weiser, H. H.; and Winter, A. R. Bacterial Growth in Chicken Salad. Ibid. 29:1094, 1953.
22. Tartakow, I. J. Gastro-enteritis. National Office of Vital Statistics, Department of Health, Education, and Welfare. Morbidity and Mortality Weekly Report 5, 1956.
23. Googins, J. A. Staphylococcal Food Poisoning. National Office of Vital Statistics, Department of Health, Education, and Welfare. Morbidity and Mortality Weekly Report 7:23, 1958.
24. Tanner, F. W. Microbiology of Foods (2nd ed.). Champaign, Ill.: Garrard Press, 1948.
25. Banwart, S. J., and Ayres, J. C. The Effect of pH on the Growth of Salmonella and Functional Properties of Liquid Egg White. Food Technol. 11:244, 1957.
26. Castellani, A. G. Inhibiting Effects of Amino Acids and Related Compounds Upon the Growth of Enterotoxigenic Micrococci in Cream Pastry. Applied Microbiol. 1:195, 1953.
27. Castellani, A. G.; Makowski, R.; and Bradley, W. B. The Inhibitory Effects of Serine Upon the Growth of Indigenous Flora of Cream Filling. Ibid. 3:132, 1955.
28. Antibiotics in the Preservation of Food. An Annotated Bibliography. Data Sheet No. 505 (1955). Brooklyn, N. Y.: Chas. Pfizer & Co., Inc., 630 Flushing Ave.
29. Jensen, L. B. Meat and Meat Foods. New York, N. Y.: Ronald Press, 1949.
30. Wiedeman, K.; Watson, M. A.; Neill, J.; and Walter, W. G. Effect of Holding Time on Bacteria in Chicken Casserole. J. Am. Dietet. A. 33:37–41, 1957.
31. Wiedeman, K.; Watson, M. A.; Mayfield, H. L.; and Walter, W. G. Effect of Delayed Cooking on Bacteria in Meat Loaf. Ibid. 32:935–940, 1956.
32. See Part I, this paper.
33. White, J. C., and Longree, K. Bacterial Aspects in the Holding of Foods Prepared in Quantity. New York State Association of Milk Sanitarians. 31st Annual Report, 215–225 (Sept.), 1957.
34. Dack, G. M. Food Poisoning. Chicago, Ill.: The University of Chicago Press, 1956.

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This paper was presented before the Laboratory Section of the American Public Health Association at the Eighty-Seventh Annual Meeting in Atlantic City, N. J., October 21, 1959.

The role of the health department in dealing with community mental health problems is still unresolved. This account of the New Jersey approach adds to our knowledge of the pattern of trial and change in this field.

MENTAL HEALTH AND THE LOCAL HEALTH DEPARTMENT

Jesse B. Aronson, M.D., M.P.H., F.A.P.H.A., and V. Terrell Davis, M.D., F.A.P.H.A.

A recent poll taken by the American Public Health Association clearly indicates that public health leaders recognize problems associated with mental health and mental illness as of major concern to them and as requiring a high priority in program development. Apparently a peak in institutional population has been reached after a long period of continuous increase, and for the past few years there has been a slow downward trend. Despite this encouraging note, however, it is evident from the indexes of social and emotional maladjustment—that is, the rates for divorce, alcoholism, juvenile delinquency, and suicide—that the problem of preserving mental health is still far from solved. Without minimizing the significance of electric shock and drug therapy, we may with some justification conclude that the most significant advance in the mental health picture is the change in the attitudes of people, both lay and professional, toward the symptoms, therapy, prognosis, and social status of the mentally ill person. The fatalistic attitude toward mental illness has been dissipated to a significant degree. We have learned that the mentally ill are frightened people who need not be pushed into panic and violence, that not all the mentally ill need hospitalization, that not all the mentally ill need to be or can be treated, that spontaneous remissions do occur under favorable circumstances, that only a small percentage of mentally ill are prone to antisocial behavior, that hospitalization is infrequently indicated as an emergency measure, and that adequate preparation of the patient for hospitalization greatly facilitates therapy and convalescence.

Progress with the hospitalized patient has encouraged increased attention to the nonhospitalized person with emotional problems—problems which directly or indirectly cause untold hardship and suffering. This knowledge has contributed toward our ability to control the many factors which give rise to emotional stress as well as providing some reality-tested concepts with which we can promote a social environment that predisposes to optimum mental health. We now recognize that we are entering a period which promises to bring within our grasp the potential to deal with the

challenge of mental health and mental illness.

At the request of a group of local health officers, the Division of Local Health Services of the New Jersey State Department of Health and the Mental Health Division of the New Jersey Department of Institutions and Agencies, with the support of the New Jersey Health Officers Association, conducted a two-day workshop to explore the question "What is the role of the local health department in mental health?" The fact that local health officers wanted to take a serious look at this question was most encouraging.

When the health officer faces this challenge, he inevitably turns to the well established patterns and guideposts which were charted so thoroughly in the control of communicable disease. First he looks for some broad, well documented epidemiological patterns. He then searches for those elements in existing programs that most nearly meet the needs of the patterns so discerned. This is followed by an exploration of the possibilities of using existing personnel in the new areas of activity. At this point, consideration must be given to the introduction of new scientific knowledge, new personnel, and additional training for those in the well established public health disciplines.

In the forefront of the relationships revealed by epidemiological analysis is the fact that deviation from the normal range of behavioral patterns is often a function of the family group and that the interpersonal relations within the family may be a major factor in its genesis. It follows that those well defined, critical periods of family life when interpersonal stress reaches a high level and pathological patterns of behavior are likely to become established are universal targets upon which preventive action can be focused.

One of these periods extends from the beginning of pregnancy through the first year or two after childbirth. The recognition of the emotional syndromes arising during this period and a program to meet the needs which they present requires an extension of services, both qualitatively and quantitatively, but does not face the health officer with the problem of developing a program outside the framework of presently recognized health department activities. Preventive activities in the form of supportive education and advice covering the usual patterns of emotional stress and the normal range of behavior are standard components of the prenatal medical consultation, the public health nursing visit, the parents' class, and the child health conference. It should be emphasized that this health department service established over the past thirty to forty years is by design made available to the normal family. In fact, after advocating such an approach as a universal need, we in public health take justified pride in the fact that the private medical practitioners of pediatrics and obstetrics have by and large adopted this practice.

Another critical period is that of adolescence when the young members of the family should change their status from that of dependence to one of independence. In this area the local health department faces an opportunity to explore new territory, to develop experiments and demonstrations of preventive services directed at the family whose children do not have their names on a police blotter. What can be done to help the parents of almost every normal teenager who are concerned whether or not the apparently bizarre episodes of their youngster are in fact within the range of normal behavior? What is the least traumatic and most constructive response such a parent can make in this situation? What do-it-yourself tips can be given to these parents? Under what circumstances is outside assistance to be solicited, of what variety, and how can

it be arranged? What elements of methodology can we extract from the content of the public health nursing visit, the parents' class, the child health conference, and the school health service? How can we remold them, add to them concepts and methods developed in the child guidance clinic, and synthesize them into a new preventive activity?

A third critical period encompasses the years of regression of physical and mental capabilities highlighted by the diminution of sexual activity and the retirement from one's regular occupation. We are all aware of the large number of cases of so-called senile dementia that are admitted to our state mental hospitals. It is certainly a legitimate question to ask, "How much of the unacceptable behavior upon which these diagnoses are made is a reaction to the emotional stress engendered by changes in interpersonal relationships?" How much may be accomplished in prevention by providing family education and guidance that will tend to reduce such stress? How many older people are admitted to mental hospitals because of inadequate community facilities for the rehabilitation of patients with chronic illness? Public health, with its responsibility for community action to prevent disease and disability and to foster optimum health and well-being, must take the leadership in answering these questions.

A few local health agencies have instituted activities in the area of group dynamics. It is clearly recognized that patient motivation in certain illnesses presents special problems, emotional in nature, which can be successfully attacked through group discussion. Groups of the obese, parents of cerebral-palsied or retarded children, patients convalescing from coronary occlusion, and alcoholics—to mention only a few such categories—have responded to group discussion under the leadership of trained personnel. Such motivation of patients and parents represents a significant tool in disease control and patient resocialization.

It is already becoming accepted public health practice that the local health department has an important role in the rehabilitation of the patient discharged from the mental hospital. Again we use the long-standing patterns developed for rehabilitation of the patient with arrested tuberculosis—the retraining, the acceptance into family and community, and the assistance in job placement. Again we use existing public health personnel, that is, the public health nurse and medical social worker, and add to our staff the psychiatric consultant, the mental health nurse consultant, and the psychiatric social work consultant. It is clearly recognized that without the availability of such community services the benefits from the modern treatment of the hospitalized mental patient cannot be fully realized.

In embarking upon such activities we must exercise vigilance lest the health department become another therapeutic agency and add to the fragmentation of the treatment of mental illness. The public health nurse should limit her functions to the generally supportive roles she is familiar with in handling other health problems. First of all, she assumes the role of family adviser and recipient of family confidence, the time-honored function of the family physician of yesteryear. Taking advantage of her position in the community and the status of her agency, she is able to help motivate the patient and the family as well as to take measures to protect the community when such measures are indicated. Second, she must be able to refer to the appropriate community resource when symptoms must be understood and diagnostic and treatment measures need to be considered. In this connection, the need is evident for close liaison between nursing agency and treatment agency and for a simple

procedure that will facilitate interagency communication. Third and most important, emphasis should be on recognition of stress situations which may be adversely affecting mental health rather than on the recognition of mental pathology.

Health education is a traditional field of health department activity. In the propagation of the ideas and attitudes mentioned here regarding the concept that mental illness in preventable and curable, the health department should work in cooperation with the Mental Health Association, the mental hospital, and other agencies that have a responsibility or interest. In securing the understanding and motivation of the individual patient and his family, the health department has a unique opportunity to exploit the well established community relationship of the public health nurse. An area of health education barely touched is the orientation of specific groups of professional and service personnel who by their handling of susceptible individuals may help build a stable psyche or conversely may facilitate the development of severe emotional trauma. Such groups include teachers, probation officers, policemen, and recreation workers.

A number of agencies play major roles in mental health. The most important of these are the schools, the mental health clinics and hospitals, the private medical practitioners, the courts and correctional institutions. The church, the social service agency, and a variety of other agencies and organitions whose activities impinge upon these problems also play a significant role. It becomes evident that there is a most significant opportunity for the local health officer to act as a catalyst—to be the voice of the community in calling for coordination of the variety of services and efforts being made by a number of agencies, in pointing out imbalance and gaps in available services, in stimulating the development of needed services, and in securing the widest community support for a broad spectrum of mental health services consistent with recognized scientific evidence and readily available to all who need them.

The local health officer and members of his staff are made aware of problems of emotional instability in the course of many diverse aspects of their activities. In the course of the workshop referred to in the foregoing, the health officers pointed out such examples as the compulsive promiscuity of the venereal disease repeater, alcoholism in the tuberculosis patient, the insignificant or fancied "nuisances" repeatedly reported by the compulsive neurotic, or the frankly disturbed individual who is alleged a violator of a health ordinance. The health officer, nurse, sanitarian, and clerk need more adequate understanding of behavioral mechanisms in order to more adequately meet the needs of such situations and avoid destructive attitudes and actions. These considerations are of little value unless members of the health department staff are in the course of such training given the opportunity to divest themselves of inappropriate attitudes. As expressed by Ginsberg,* "There is today general agreement that a working knowledge of the motivations of human behavior, of the principles of emotional growth and development, of the ways in which people commonly deal with other people and life situations—that this working knowledge is essential for truly effective performance in all the service professions, certainly in those concerned with the health and welfare of people."

In New Jersey, initial steps are being undertaken to implement these ideas at the state and local level. The most significant first steps were a series of

* E. L. Ginsberg. Public Health Is People. New York, N. Y.: Commonwealth Fund, 1950.

discussions and joint actions between members of the staffs of the State Department of Health and the Division of Mental Health of the Department of Institutions and Agencies. The community mental health bill was planned, its scope and major features outlined by such a joint committee.

The State Department of Health had been conducting a series of workshops in cooperation with the New Jersey Health Officers Association aimed at delineating the respective responsibilities of the state and local health departments in chronic illness control. After completing a series concerned with diabetes, cancer, and heart disease, a questionnaire circulated among the health officers showed an overwhelming first choice for a workshop on mental health.

Stemming from this workshop there developed on the part of the local health officers a sharp realization that inservice training facilities for their staffs were urgently needed. A major need was to provide such training for public health nurses. As a result of interdepartmental discussion it is now planned that the Health Department will employ a public health nurse consultant in mental health and assign her to a liaison function with the Division of Mental Health of the Department of Institutions and Agencies.

These joint discussions were facilitated by the formal establishment of an interdepartmental committee meeting regularly. This committee has the responsibility for setting up working committees to explore mutual problems and for making joint recommendations to the two commissioners.

Over a period of several years, a project has been developed in Monmouth County providing for public health nursing follow-up visits to the homes of patients on convalescent leave from the state mental hospital located in that county. Within the past year, public health nurses in the Northern State Health District and in the East Orange Health Department have been given planned training in mental health for the purpose of preparing them for a similar type of service. Outpatient department teams are currently being organized in each of the four state mental hospitals. These teams, which consist of a psychiatrist, a psychiatric social worker, and a psychologist, will be the two-way transmission channel for patient information between the hospital and the community agencies involved in reintegration of the patient into the family, the community, and occupational setting. They will serve as the technical backstop for the generalized nurses and medical social workers in the community, providing readily available consultation and the mechanics for readmission of the patient to the hospital when indicated. It is planned to inaugurate this service as of January 1, 1960.* In order to coordinate public health nurse orientation in mental health and to elaborate the basic guide lines, limitations, and consultation and referral procedures, the Interdepartmental Committee is sponsoring a workshop for public health nursing directors and key hospital personnel.

It is likely that the development of one phase of local health department activities in mental health will pave the way both in staff readiness and in public acceptance and support for other phases. It is essential, however, to keep the entire problem in its correct perspective so that limited activities will not take on the appearance to the staff and to the public of end points in program development. It is equally important that ineffective or overlapping services be avoided in order that we provide the greatest possible return on the tax dollar. Above all, it is essential that additional and expanded services, as they develop, be coordinated into a pattern providing maximum continuity of services for the

* This plan has now been inaugurated.

patient, his family and the community. We hope that we shall have the wisdom, flexibility, and open-mindedness to take advantage of new ideas as they arise and to go along those paths which will be most effective.

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This paper was presented before a Joint Session of the Health Officers and Mental Health Sections of the American Public Health Association at the Eighty-Seventh Annual Meeting in Atlantic City, N. J., October 20, 1959.

February Conference on Pregnancy Wastage

The Committee on Maternal and Child Care, American Medical Association, will hold a Southern Regional Conference (February 19, Atlanta Biltmore Hotel, Atlanta, Ga.) in an effort to bring together physicians representing state and local medical societies, health departments, medical schools, and hospitals interested in reducing pregnancy wastage, especially perinatal and maternal mortality and morbidity. The conference will be devoted to an elaboration and promotion of AMA's two publications "A Guide for the Study of Perinatal Mortality and Morbidity" and "Supplementary Material" designed to assist local hospital committees in evaluating their own problems. (See Credit Lines, this issue.)

Those who attend will have an opportunity to present their local experiences with perinatal and maternal studies as well as their ideas on how the committee might better serve them. Further information from Herman W. Gruber, Department of Medical Service, AMA, 535 North Dearborn St., Chicago 10, Ill.

This paper reports the methodology of a study of public health nurses and their relations with patients in the course of their work. Methods of data collection and interpretation are discussed, particularly attempts at quantification.

SOME ASPECTS OF THE INTERACTION OF PUBLIC HEALTH NURSES AND PATIENTS IN HOME VISITS. A PROGRESS REPORT

Walter L. Johnson, Ph.D., and Helen M. Simon, R.N., M.A.

THE most general goal of the Public Health Nursing Study of the American Nurses' Foundation, supported by a grant from the U. S. Public Health Service, is to contribute to the accumulating body of literature related to certain aspects of public health nursing. More specifically, the purposes of the study are (1) to identify, and describe systematically, patterns of direct nursing care rendered by public health nurses to patients with different kinds of problems in the home setting, (2) to ascertain and measure the variations in patterns of nursing care, and (3) to attempt to identify or isolate factors or determinants associated with such variations.

In pursuing these purposes, it is expected that the study will provide for public health nurses a sizable body of factual data about current patterns of home nursing care, and it is hoped that the results of the study will clarify or otherwise increase general understanding of the forces in operation which modify and contribute in unforeseen ways to variations in patterns of care. If these purposes can be achieved, the results should help public health nurses to locate the gaps between the ideal and current practice and they may be of some help to nurses in selecting remedial courses of action aimed at general improvement of public health nursing care.

This paper is a progress report, and it must be stressed that the preliminary findings we present are attempts to grapple with a sizable array of data pertaining to many dimensions of nursing care. We have not had time to assess the validity of the varieties of behavior of the nurses in our sample as indicators, whether in amount or quality, of aspects of nursing care, nor have we been able to investigate all the interrelations between the scores and indexes with which we are experimenting. Synthesis of the results remains one of our central tasks and cannot be dealt with in this paper.

Methods and Procedures

The methods employed in this study have been reported in detail in earlier progress reports, and for this reason we

Table 1—Home Visit Case Load of 178 Public Health Nurses Observed for One Full Day, by Diagnosis of Primary Patient

Diagnosis of Primary Patient	Home Visits		Patients Given Care in Visits	
	No.	Per cent	No.	Per cent
I. Morbidity visits				
Psychobiologic	41	4.3	89	5.1
Integumentary	73	7.6	93	5.3
Muscular-skeletal	44	4.6	65	3.8
Respiratory	90	9.4	136	7.8
Cardiovascular	148	15.4	167	9.7
Digestive and genitourinary	25	2.6	39	2.2
Endocrine	23	2.4	39	2.2
Nervous system	128	13.4	142	8.2
No primary diagnosis	54	5.7	82	4.7
II. Preventive health visits				
Antepartum	41	4.3	48	2.8
Postpartum-newborn	144	15.1	255	14.7
Infant and child health	88	9.2	391	22.6
Adult health	24	2.5	72	4.2
Other	33	3.5	117	6.7
Total	956	100.0	1,735	100.0
Summary:				
Morbidity	626	65.4	852	49.2
Preventive	330	34.6	883	50.8
Total	956	100.0	1,735	100.0

will be brief in discussing our methodology.*

1. The Nurse Sample

The sample of nurses consists of 178 public health nurses from two regions, the New York-New Jersey metropolitan area and the western parts of the states of Indiana, Kentucky, and Tennessee. Each nurse was followed by a nurse-observer for a whole day, and over 900 home visits were mechanically recorded. The nurses were sampled according to type of agency control (that is, whether employed by health departments or visiting nurse services); by agency size; and by personal characteristics of age and educational status. Random sampling was facilitated by a complete census, made prior to the sample selection, of actively employed public health nurses in each study area.

2. The Case Sample

A review of the case load of the sample nurses upon completion of the field work revealed that only certain types of cases could be analyzed intensively, and seven such types were selected: (1) cardiac, (2) cancer, (3) tuberculosis, (4) cerebral vascular accidents, (5) antepartum, (6) postpartum, and (7) infant and child health. A description of the total case load of the sample nurses may be seen in Table 1.

* For more detailed information, consult a report presented at the Convention of the American Nurses' Association, June, 1958.

3. Kinds of Data

The central sources of data for the study are the mechanical recordings of the home visits made by the sample nurses, but other kinds of data have also been collected. For example, a log of events occurring during the nurse-day was kept by the nurse field workers; check lists relating to physical procedures have been compiled; data pertaining to the personal characteristics of the sample nurses are available through questionnaires; and limited data about the patients and household members were provided by the nurses.

4. Processing the Recordings

One of the study goals has been to quantify the recordings of nurse-patient interactions, and a series of processing stages has been set up for handling these data. Instructions for each of these stages have been developed. The stages are: (1) abstracting the recordings on a special form; (2) analyzing the abstracts into subject matter sequences; (3) examining the sequences for several classes of events and recording these events on special forms. Our methods permit us to compile data on both content and process in the nurse-patient contacts and to group or summarize them at different levels of abstraction. Tests of the inter-observer reliability of the system of analysis have been devised, but we do not yet have these results.

These quantitative methods are not the only approaches that will be used. Eventually the recordings will be reviewed and scrutinized from several points of view. A panel of public health nurses plans to review the cases from the standpoint of evaluating quality of care, and a panel of social scientists will be examining the cases for relations to and illustrations of social science theory.

Discussion

We now turn to a consideration of some of the specific categories of behavior which we are currently using in the quantitative analysis of the recordings and shall discuss through illustrations the bearing these categories will have on the final results of the study. The categories used have both communicative and procedural aspects (for example, see Table 2). Such categories will be used to measure various dimensions of nursing care, although at this point the validity of some of them as "true" measures of important dimensions of care may be open to doubt. Nevertheless, we can report that certain of these categories and their derivatives already offer considerable promise in differentiating patterns of nursing care and in helping to identify some of the forces and factors relating to variations in patterns of care. We now present a few examples relating to the verbal interactions of nurse with patient and/or other household members, and we shall give some examples with respect to nursing procedures following these.

1. Verbal Behavior

The first example pertains to the confirmation of expected differences in the behavior of nurses, depending on whether the visit is a health supervision visit or a morbidity visit. Table 2 reveals several interesting differences among the groups of cases. In the postpartum visits, the nurse appears to assume in several respects a more dominant role than in the other types of visits. Her output of words is greater, she is likely to outtalk the patient, she is more influential in the introduction of ideas, and proportionately more of her word output is given to advising and instructing than in other visits. The table also reveals that the tuberculosis

Table 2—Some Characteristics of the Verbal Behavior of Participants in Public Health Nurse Home Visits with Postpartum, Cardiac, and Tuberculosis Patients (Median and First and Third Quartiles)

	Median Values				First and Third Quartile Values							
	Post-partum (N=66)	Cardiac Injection (N=47)	TB Injection (N=19)	Other TB (N=27)	Postpartum 1st	Postpartum 3rd	Cardiac Injection 1st	Cardiac Injection 3rd	TB Injection 1st	TB Injection 3rd	Other TB 1st	Other TB 3rd
Total length of visit (in min.)	30.8	16.8	13.6	27.0	16.6	38.5	12.8	20.0	8.2	20.6	18.8	33.6
Total talk by nurse (in min.)	11.1	4.5	3.2	8.2	6.0	16.0	3.0	6.5	1.7	5.6	5.5	12.4
Total talk by household members (in min.)	7.4	6.0	3.7	9.6	3.5	12.8	3.9	8.5	2.4	7.5	5.7	17.4
Per cent of all talk about health status of primary patient	70	65	60	54	49	81	50	80	45	80	36	69
Per cent of subject matter introduced by nurse	78	64	54	65	60	89	50	70	44	70	51	78
Nurse talk as percentage of all talk	57	43	44	48	45	73	38	50	32	62	36	64
Per cent of nurse talk advising and instructing	33	17	7	24	24	46	9	26	0	12	10	32
Per cent of household member talk verbalizing problems	9	12	5	6	3	15	5	22	1	13	2	16

injection visits are more similar in several characteristics to the cardiac injection visits than they are to tuberculosis visits where no injection was given.

Statistical differences such as these reflect with fair accuracy some important underlying differences between health supervision and morbidity home visits. Not only do the needs of households vary in the two kinds of visits, but the nurse's tempo of contact with the household is markedly different, and this in turn has certain consequences for the way the nurse organizes her care. In health supervision visits, exemplified by the postpartum group, the nurse is usually going in for the first or second time, seldom for more than a third or fourth time. The consequence of this for the nurse is that much of what she accomplishes must be compressed into one or two face-to-face contacts. If she is to perform such functions as appraising, evaluating, planning, or teaching, she has to accomplish them within a limited time. By contrast, such time limitations on the nurse are less compelling in morbidity cases, and opportunities for accomplishment are probably greater, if for no other reason than that the nurse ordinarily has frequent contacts with the household over long periods of time.

A second example of the usefulness of these categories is that they are showing up a need to give a great deal of attention to differences among nurses in rendering care to patients with similar diagnosis. In Table 2, one sees the range of variation with respect to each of these behavior items for each type of home visit, and in many instances the variation is marked. One item is the amount of talking the nurse does in the postpartum group. While the median value is about 11 minutes, 25 per cent of the nurses talk less than 6 minutes, whereas 25 per cent at the other extreme talk 16 minutes or more. In other words, the range for the middle 50 per cent runs from 6 to 16—a difference of 10 minutes, which in itself is large enough—but the other 50 per cent fall outside this range. These are important differences if we assume that quality of nursing care is in some way related to the time the nurse gives her patients; and it is apparent that these diagnostic groups are not homogeneous entities.

The presence of such large differences inevitably leads to the question of how one accounts for them. Eventually we plan to cross-tabulate the indexes of behavior against several sets of variables to answer, or at least to illuminate, this question. One class of variables which is already showing up in our preliminary examinations throughout all types of cases is the influence which the actions and responses of household members have in modifying or altering the nurse's course of action within the interacting situation. Specifically, it appears that such factors as the nature of the interests expressed by household members and the aggressiveness or lack of aggressiveness with which they state their interests are associated with variations in some patterns of nurse behavior. We have two examples which offer evidence in support of this hypothesis:

First, it seems that the attention of the nurse to the primary purposes for which she enters the home may be directed away or diverted to an extent not always recognized. This is determined by the degree to which the interests and concerns of the household are congruent with the primary purpose of the visit and by the tendency of household members to initiate discussion of their own interests. If, for instance, members of a household turn and return to discussion of subjects different from, or not directly related to, the primary reasons for which the nurse has made the visit, the nurse is not

Table 3—Nursing Procedures Conducted by 140 Public Health Nurses, by Type of Agency Control and by Geographic Location

Procedure	Health Department						Visiting Nurse Service					
	New York-New Jersey			Ky.-Ind.-Tenn.			New York-New Jersey			Ky.-Ind.-Tenn.		
	No. of Nurses	No. of Procedures	No. of Procedures/Nurse	No. of Nurses	No. of Procedures	No. of Procedures/Nurse	No. of Nurses	No. of Procedures	No. of Procedures/Nurse	No. of Nurses	No. of Procedures	No. of Procedures/Nurse
Injection	21	55	2.6	6	27	4.5	46	145	3.1	14	49	3.5
Bath	15	17	1.1	0	0	0	36	58	1.6	15	29	1.9
Dressing	22	27	1.2	5	9	1.8	23	30	1.3	4	8	2.0
Enema	2	3	1.5	0	0	0	11	13	1.2	6	7	1.2
Rehabilitation Technic	7	9	1.3	0	0	0	25	43	1.7	5	9	1.8
Health appraisal	27	54	2.0	13	42	3.2	38	123	3.2	11	30	2.7
Total, all procedures		165			78			412			132	

likely to give as much time to discussion of the patient's health status, nor are many topics relevant to the primary patient likely to arise. What this presumably means in practice is that, given this kind of household situation, the nurse tends to be somewhat less thorough (probably unconsciously) than she would otherwise be in pursuit of her primary purposes.

The second example pertains to the amount of advice and instruction the nurse gives to households. Here we are discovering that amount of advice and instruction is related both to the nature of problems verbalized by household members and to the extent and intensity of verbalization. Thus, the amount of advising a nurse does seems to be highest in households which have many complaints about the health status of the primary patient. If, on the other hand, there are many complaints about subjects other than the primary patient, there is a noticeable drop in the amount of nurse advice, which tends to be lowest of all in households where complaints are at a minimum and where the focus of interest is away from the primary patient. What these preliminary findings suggest is that the sample nurses have responded selectively to manifest cues elicited from household members and that as a consequence, patterns of teaching have been modified.

2. Nursing Procedures

The categories discussed so far pertain to the verbal-communicative aspects of nursing care. However, we all know very well that this is only a part of the story and that nurses conduct many technical-physical procedures as an integral part of the nursing role. For this reason we now comment on the initial results of our examination of some of the nurse's activities involving physical care of patients. Observations of 178 public health nurses who dealt in

some way with the problems of almost 3,000 people provided information for many kinds of empirical and/or systematic review. We selected certain specific nursing procedures for systematic study. Table 3 provides a detailed account of these procedures as they relate to the nursing care case loads of our sample nurses. These check lists on injection, bath, enema, dressing, physical therapy, temperature, pulse and blood pressure procedures were designed to serve a twofold purpose: first, to provide a means by which certain aspects of repeatedly administered procedures could be objectively recorded and subsequently reviewed with the aim of describing differences and/or similarities in the manner in which nurses performed them; second, and equally useful, to make possible a comparison of certain physical behavior of nurses with certain verbal behavior. Here are some of our preliminary findings as they relate to each of these purposes:

Each of the aforementioned check lists had in common certain procedural dimensions, such as medical asepsis, position and preparation of the patient, general observable response of the patient to the procedure, and the observation of a written notation concerning it. In addition, other dimensions were unique to the procedure, such as the time used to take temperature and pulse, the use of sterile or surgically aseptic equipment in the dressing of a wound, and the mode of administering an injection.

In view of the seemingly reawakened interest in the extent to which medical and surgical asepsis is employed in the care of maternal, neonatal, medical, and surgical patients, our findings on the practice of handwashing technics might be of some interest.

Medical asepsis in the form of handwashing was practiced by 142 of our sampled nurses in the performance of 87 per cent of our 757 check-listed nursing procedures. Table 4 illustrates the rate of handwashing employed in providing care to patients in the home and in other settings (school, clinic, nursing home, mobile unit, place of business). We have begun to see that the setting in which care is given seems to exert some influence, to a greater or lesser degree upon the nature of that care. Tables 4, 5, and 6 illustrate differences seen in the performance of handwashing technics and other selected aspects of care as they appear to be related to or to be affected by the "setting." We may note here that although the term "setting" is usually interpreted as describing a physical environment, such as home or school, it could be used to describe the interactional environment, such as the nurse-patient contact alone in contrast to the nurse-patient-household member contact.

In addition to inquiring into the in-

Table 4—Rate of Handwashing Technic Employed by 142 Public Health Nurses in 757 Nursing Procedures, by Type of Setting

Handwashing Technic	Home		Other		Total	
	Number	Per cent	Number	Per cent	Number	Per cent
Did wash	605	93	47	45	652	86
Did not wash	48	7	57	55	105	14
Total	653	100	104	100	757	100

Table 5—Performance of Selected Aspects of 107 Oral Temperature Appraisals Conducted by 63 Public Health Nurses, by Type of Setting

	Home		Other		Total	
	Number	Per cent	Number	Per cent	Number	Per cent
1. Time taken:						
3 minutes or more	41	65	40	91	81	77
Less than 3 minutes	22	35	4	9	26	23
Total	63	100	44	100	107	100
2. Concomitant pulses:						
Pulses taken	42	67	6	14	48	44
Pulses not taken	21	33	38	86	59	56
Total	63	100	44	100	107	100
3. Handwashing:						
Did wash	60	95	24	54	84	78
Did not wash	3	5	20	46	23	22
Total	63	100	44	100	107	100

fluence of the "setting" upon selected aspects of practice, we are pursuing some promising clues to the effect of variations in technics among nurses. For example, among nurses who performed three or more of the check-listed procedures, we found that 71 consistently practiced handwashing in 552 incidents of physical care; seven consistently did not practice handwashing when they performed 30 procedures; and 20 varied considerably as to whether they did or did not wash their hands when they carried out 150 nursing procedures. Although the case loads of our nurses were so varied in terms of the number of times nurses carried out the same type of procedure for the same type of patient, we found some groups of nurses who gave care to patients having the same diagnosis and we found some differences among them in the consistency with which they provided care. For instance, among groups of nurses who visited three or more cardiac and/or neonatal patients, there appeared to be patterns of consistency and inconsistency in whether or not pulses were taken, examinations for edema were made, or newborn inspections were done. In the last-named situation, there were differences regarding handwashing when nurses handled the new infants.

As an illustration of the posible influences of the "setting" and of variations in nursing practice among nurses, we present a very rapid chronology and description of a single nurse-day, focusing mainly on the employment of aseptic technics and other pertinent dimensions of care. This nurse visited seven patients in their homes during her seven-hour day in the field.

Patient No. 1 was a decompensated cardiac patient who received a diuretic injection twice a week. Handwashing occurred as part of the "bag technic." The patient had apparently sterilized the equipment prior to the nurse's arrival. The injection was given with the patient in a standing position. The syringe plunger was aspirated, and the medication was injected slowly. The

patient's pulse was taken for 30 seconds, and an observation for edema was made. The nurse sat down to record her notes then rose to pack her bag and left the home.

Patient No. 2 had suffered a cerebral-vascular accident and was receiving a bed bath and rehabilitative exercises five times a week. The family had a dog which had developed a cardiac condition because of age. Upon her arrival and at the request of the family, the nurse stopped to administer a diuretic pill to the animal. She then proceeded to shave and apply lotion to the patient's face, after which she began passive leg and arm exercises. During the course of the exercises and at the request of the patient's wife, the nurse paused to instill ointment into the wife's eyes. Upon completion of the exercises, the nurse left the room to collect the bath equipment, whereupon, for the first time in the visit, handwashing was done. As part of the bath procedure the nurse carefully applied lotion to the patient's back and extremities, after which she helped him to dress, applied his braces, and slowly walked with him to his wheel chair. After making the bed and tidying the room, the nurse packed her bag and left the home.

Patient No. 3 was a moderately deformed arthritic, whom the nurse visited daily to assist in changing her clothes. No handwashing was done during the visit. Before helping the patient to dress and to put on numerous corsets, the nurse carefully applied vaseline to the dry skin on the patient's feet. Before leaving the home, she picked up a letter the patient had asked her to mail and paused to pour milk for the cat.

Patient No. 4 was a very quiet, seemingly withdrawn woman who had sustained a hip fracture and who received a bed bath three times a week. The nurse entered the patient's room, paused to fix the bed pillows and adjust the patient's position before removing her apron from her bag. She then left the room to collect the bath equipment. During the bath she used her fingers to apply ointment to the patient's decubitus, following which she powdered the patient's feet, helped her to dress, and slowly walked with her to a wheel chair. After carefully combing and braiding the patient's hair, the nurse removed her apron, packed her bag, and left the home.

Patient No. 5 had suffered a cerebral-vascular accident, and the nurse

Table 6—Performance of Selected Aspects of Wound Care Conducted by Public Health Nurses, by Type of Setting

	Home		Other		Total	
	Number	Per cent	Number	Per cent	Number	Per cent
1. Wound cleansing:						
Wound cleansed	35	92	21	72	56	84
Wound not cleansed	3	8	8	28	11	16
Total	38	100	29	100	67	100
2. Handwashing:						
Did wash	37	92	13	45	50	72
Did not wash	3	8	16	55	19	28
Total	40	100	29	100	69	100

administered a bed bath four times a week. She entered the patient's room, removed her apron from her bag, washed her hands, and tidied the room before collecting the bath equipment. During the bath the nurse paused briefly to instill drops into the patient's eyes and to apply lotion to her legs. After applying her brace, corset, and other clothing, the nurse assisted the patient into a chair, packed her bag, and left the home.

Patient No. 6, like Patients No. 2 and No. 5, had had a cerebral-vascular accident and received a bed bath three times a week. Essentially, the nurse administered the procedure in a manner similar to that administered for the other patients. Handwashing was not done prior to the procedure. At the close of the visit the nurse paused to take the patient's pulse for 15 seconds, after which she packed and left the home.

Patient No. 7 was an ambulatory patient with a diagnosis of psychoneurosis. She was given 4 cc. of thiamin chloride, intramuscularly, twice a week. Upon her arrival the nurse unpacked her apron, assembled an autoclaved 2-cc. syringe. The medication was administered in two separate injections, with the patient in a reclining position. The plunger was aspirated, and the solution was introduced rapidly in both instances. No handwashing occurred during the visit. The nurse replaced the apron in her bag and left the home.

Although, as mentioned previously, the majority of our nurses consistently employed handwashing technics throughout their observation days, they often tended, like this particular nurse, to be inconsistent in providing other aspects of care (for example, the position in which ambulatory patients were given gluteal intramuscular injections). This nurse-day was selected to illustrate the consistencies and inconsistencies in one nurse's repeated performance of aspects of care.

This nurse consistently provided additional skin care to patients who spent a good deal of time in bed, just as she appeared consistently to handle unique situations within the "setting," such as providing veterinary nursing care—if you will—to the dog and cat and carrying out measures requested by other household members. On the other hand, she tended to be inconsistent in her practice of medical and surgical asepsis. Since all the visits made by this nurse have not been subject to our analytic process, it is not possible to discuss consistencies and inconsistencies of her verbal behavior. However, after listening to her day's activities, one is impressed by the consistency of the warm, easygoing relationships she maintained with patients.

We hope to search our other data about the nurses and patients and their characteristics to see if we can shed additional light on these meaningful patterns of nursing care.

3. Relationship of Physical to Verbal Nursing Care

There were considerable differences in the extent to which nurses discussed symptomatology and treatment measures relevant to the patient's primary diagnosis, as well as variations observed in the type and nature of problems presented by patients. We have begun to see that the more nurses seem to focus verbally on the physical condition of the patient, the more they seem to do in terms of physical care. For example, in our sample of cardiac patients, the nurses who were highest in the group in discussing and advising about the patient's physical condition tended to be highest in performance of pulse appraisal and examination for edema. Correspondingly, in the sample of visits to the newborn, nurses who were highest in giving advice on infant care tended to be highest in doing newborn

inspections, weights, and/or temperature appraisals. Although these findings are as yet inconclusive, we are optimistic in our feeling that we may uncover some meaningful relationships between the types of problems which patients and nurses discuss and what is done physically (through various appraisal technics) and verbally (through more intensive probing by question and advising).

Also there appears to be a relationship of nonverbal behavior (or silence) to physical care in that a good deal of the unutilized interaction opportunities can be accounted for by its relationship to the preparation for executing a nursing procedure. For instance, in a 38-minute visit to a cardiac patient who received a diuretic injection, there were 18 minutes of face-to-face nurse-patient silence. Sixteen of these minutes were spent in the collection, sterilization, and assembling of equipment. Here again, there appear to be considerable differences between nurses in the amount and in the utilization of these periods of silence.

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This paper was presented before the Public Health Nursing Section of the American Public Health Association at the Eighty-Seventh Annual Meeting in Atlantic City, N. J., October 20, 1959.

Cardiovascular Research

All of us who are concerned with medicine or aviation, or both, are living in a period more stimulating than any other of living memory. Whether we realize it or not, our age will probably be regarded as one of the greatest scientific revolutions in human history. Speed of innovation is one of the unique characteristics of contemporary science. Another is the increasing synthesis of the biologic and physical sciences in a search for new principles concerning human physiology. These two factors alone present practicing physicians and administrators of medical programs with a problem which has no ready solution; namely, how to keep pace with the rapidly advancing front of science. The speed of discovery in clinical research is perhaps less difficult to overcome than the increasing dependence of medicine on technics and bodies of knowledge hitherto unknown, or superficially taught, in basic medical curriculums. Hence, the problem of communication between research scientists and medical practitioners involves both enrichment of the physician's basic preparation and his continuing education.

L. E. Burney. Cardiovascular Research in the Public Health Service. American Journal of Cardiology (July), 1960.

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Journal of Public Health

EDITORIALS

Control of Malnutrition in Man

THE issuance by the American Public Health Association at the end of last year of a manual on "The Control of Malnutrition in Man" marks in a practical way the changes that have been taking place in public health. In the fall of 1917 under the guidance of Haven Emerson the Association published the manual, "Control of Communicable Diseases in Man," now in its ninth edition.

Eleven years earlier, Frederick Gowland Hopkins, the British biochemist, had postulated the existence of minimal qualitative factors other than the known basic nutritional elements—protein, carbohydrate, fat, minerals. In 1912, Hopkins demonstrated in a series of convincing experiments that an animal's diet must contain minute amounts of certain essential substances other than the hitherto accepted basic nutrients if the organism was to remain in good health. He called these elements, "accessory nutritional factors."

The period from 1912 to the present has been concerned with the consequences of the concept of a deficiency disease, with the elaboration of this concept, and the application of the knowledge that has been acquired as a result. This work has proceeded along several lines. A variety of accessory dietary factors, vitamins, have been isolated and associated with specific diseases. As these factors and substances became known, efforts were made to determine their chemical nature and metabolic functions. Methods have been developed to determine the vitamin content of foods, and norms have been established for optimal nutrition. Increasingly, administrative and educational tools were created to utilize this knowledge in order to improve individual and community health. As a result, public health nutrition has moved into the very forefront of health work.

Haven Emerson with his conspicuous foresight had recognized the great public health significance of the food deficiency diseases, and had recommended the preparation of a companion manual to "The Control of Communicable Diseases in Man," which would provide authoritative guidance in the prevention and control of disorders due to malnutrition. By 1956, it was clear that the time was ripe for such a manual, and a committee headed by Dr. William H. Sebrell, Jr., was appointed to deal with the task. With the assistance of a group of outstanding authorities, the Committee on

Control of Nutritional Diseases has now made available a concise account of current knowledge on the practical control of malnutrition in man. It is naturally anticipated that this volume will require periodic revision in order to keep it up to date, but one can also anticipate that it will enjoy a long and useful life like the Association's communicable disease manual. We welcome "The Control of Malnutrition in Man," and recommend it to all public health workers. And to Dr. Sebrell and all those who have contributed to the production of this volume we wish to express our admiration for a task so well done.

Excess Mortality Due to Influenza —Protect the Aged and the Chronically Ill

SINCE 1957, the United States has experienced three epidemic waves of Asian influenza. The first two swept the country in the fall of 1957 and the winter of 1958, and led to 69,000 more deaths than would have occurred under normal conditions. The third wave rose abruptly during the first three months of 1960 and produced more than 26,000 excess deaths.[1]

These epidemics have been caused by a new antigenic variant of Type A influenza virus, which has been named Type A2. Evaluation of polyvalent influenza vaccine has shown that it has value in preventing influenza. Consequently, it appears logical to try to reduce the number of excess deaths from influenza through immunization.

Analysis has shown that the excess deaths from influenza have occurred most markedly among the aged, the chronically ill, and pregnant women. In the most recent epidemic, over three-fourths of the total excess deaths occurred among older persons. Furthermore, the excess deaths were overwhelmingly attributed to two groups: pneumonia-influenza (40 per cent) and cardiovascular-renal disease (46 per cent). Clearly, those who suffer the greatest risk are older persons, and particularly those with cardiovascular disorders.

For this reason, the U. S. Public Health Service recommends that influenza vaccination for the aged and the chronically ill be made as routine a medical procedure as is immunization of infants against diphtheria or whooping cough. Physicians and public health workers should carry on such a program as a regular activity and not as a mass campaign. Specifically recommended for routine immunization are persons of all ages who suffer from chronic cardiovascular, pulmonary, renal, or metabolic disorders (rheumatic heart disease, arteriosclerotic or hypertensive heart disease, diabetes mellitus, Addison's disease, chronic bronchopulmonary disease), pregnant women, and all those who are 65 years and older.

Immunization of the high-risk groups should be carried on regularly and annually, no matter what the predicted incidence of influenza may be for a particular year.

1. Detailed information on excess mortality from Asian influenza will be found in "Asian Influenza 1957-1960." A descriptive brochure, Communicable Disease Center, USPHS, Atlanta, Ga. (July), 1960. "Influenza Fact Sheet" (Aug. 1), 1960, provides information on influenza vaccine, and the groups recommended for immunization.

TO THE EDITOR:

100 Per cent Full-Time Public Health Coverage —Conventional Model

In the preparation of a suitable announcement of this achievement for Louisiana with the oldest (105 years) State Board of Health in the country, we had some difficulty in arriving at an appropriate title when we recalled some recent articles that have appeared in the American Journal of Public Health as well as other publications about the apparent failure of the local public health departments as many of us have known them and still work in, to grow and meet the demands and challenges of the modern community health problems.

However, at the risk of being labeled a bit old-fashioned and archaic, we do proudly announce that as of August, 1960, all 64 parishes (counties) in Louisiana have a full-time individually independent health unit (department) made up of basic sanitary, nursing, and clerical personnel. Only health officer coverage as well as certain special categories are provided on a district or regional basis, particularly for the smaller units.

We realize that perhaps some of the success of promoting this type of public health service in Louisiana, as well as the other southern states, when apparently others, particularly in the Midwest and East are failing to do so, is the fact that it has been traditionally pioneered and accepted in the southern states area, so that quite frequently areas without such services within states that are already well organized adopt them by observing the success of their services in the neighboring areas. However, we consider this to be a minor factor, since the competition for the state and local tax dollar for the support of these and other public services in the South is just as challenging, if not more so than in other areas of the country, and we face the same problem as do other public health administrators in trying to sell and convince our governing and appropriating bodies that the public health programs we recommend reasonably meet the needs of the people and are a sound investment.

The achievement of this goal was greatly enhanced by what some of us realize now was a real blessing in disguise, and that was the reduction a few years ago in federal public health funds to the states. This, along with certain other factors in Louisiana in the past ten years resulted in not only an over 100 per cent increase in state public health appropriations, but the sponsoring by the State Police Jury Association (parish governing bodies) of a Legislative act enabling the parishes to call millage tax elections for the support of local health units. The law provides for a maximum tax of three mills for not longer than ten years, or any fraction thereof. To date, 31 of the 64 parishes have voted such taxes, and this also has resulted in an over 100 per cent increase in local levies for public health services.

It should be noted that this is a real test of local interest in the support of the local units since the law requires that the election must be passed by not only a majority of the voters, but also by a majority of the assessed valuation voted by the property owners in the election. Not all elections have been successful, one succeeded on the third trial, and several on two trials. Also, several taxes have been successfully revoted. Of some additional interest in these efforts is that of the last four parishes organized. Three of them were voted in with a tax that provided for not only the maintenance and support

of the units but also the construction of new health centers under the matching Hill-Burton program.

A word of caution might be given relative to our Louisiana experience with such a tax after some ten years trial with it. There are pitfalls in not only trying to determine in each case just how much tax should be recommended but also for how long it be voted in our present inflationary economy. For example, in a small or medium-sized conservative type parish we are tempted to call for as long a term as possible to avoid frequent tax re-elections that are never too popular under any circumstances. However, unfortunately, this is also the type of locality where the property values rise very slowly, if at all, and we are faced with a long-term, relatively fixed, annual income, with operational costs increasing embarrassingly without even expanding staff or program! let alone providing for ever growing service demands.

Another development during this period, which we have already briefly mentioned, is the promotion of a health center construction program which has been stimulated in Louisiana as in other areas through the federal Hill-Burton funds. With the growth and expansion of the units and programs, local public interest as well as active staff promotion has resulted in the construction of 81 new modern health centers and branches. Only seven units are now classed as having sub-par facilities, and all of these are in small parishes except one. Considerable impetus was given to this program in its early days by successfully promoting matching funds from the state Legislature—which, when added to the Hill-Burton monies, gave the local officials a real incentive to participate.

To us this conservative and sometimes so-called traditional approach to the problem of meeting the new challenges for community health services is still a sound one, in spite of what appears to us to be a pessimistic or even defeatist attitude in an increasing number of our colleagues and co-workers who appear to be searching for some new hypothetical structure or organization, which should preferably carry another label to meet the new public health needs of today or the future. Why?

For one thing most of us still agree that the solution to community health services can best be reached at a local level, and the further we go from there to a district, regional, state, or national type program the more unsatisfactory and usually more costly it becomes. So, a local unit or organization by whatever title it may assume, specifically set up to meet local needs, professionally staffed and provided with modern facilities and funds in keeping with whatever the community wants to purchase in the way of services, is still a basically sound approach insofar as we are concerned.

Now relative to limiting the perspective of these units to the so-called seven basic services, or assigning the sanitarians, nurses, and other personnel to stereotyped inspectional duties, or clinic and service quotas of bygone days, we certainly hold no brief for them. We also have had to live down artificially set per capita cost figures for basic or optional public health services, and equally out-dated staff-population ratios. (We still mention these as of historical interest to the students at Louisiana State University and Tulane University!). However, of the so-called basic seven, most of us must face the fact that at least three of them are legally required functions of our departments, and they are communicable disease control, sanitation, and vital statistics. (We note that in a recent public survey in an eastern state some of these were mentioned as still being an expected function of a local health department.)

So, why not use this basic structure to build and expand on? Our answer

to the question which we see so frequently now, of where we are going in public health, or how to meet these new challenges, is again that this decision should be made as near the local level as possible, with the realization that the health officer of the future, whatever he may be called, will have to plan programs in the fields of aging, chronic disease, medical care particularly for the indigent, health insurance programs, etc., and the public health nurse expand into the fields of mental health, home visiting particularly for the aged and chronically ill, and so on, the sanitarian or whatever his new title might be, expand from his traditional inspectors role to the new challenges in radiation hazards, air pollution, safety, etc.

We would also be the first to admit that our brand of crystal ball is perhaps no better than some of the ones we are talking about in trying to meet these challenges, but until a better and more specific approach is demonstrated, we shall continue to build here in Louisiana on this same traditional structure which can be modified, as already stated, to meet the changing times.

To cite a few examples at the local level, the expansion and growth of the parish staffs and facilities have already resulted in a few developments that are worthy of mention. Clinic services in such routine activities as immunization, venereal disease, tuberculosis, maternal and child health and school hygiene have increased tremendously throughout the state, and with the health director recruitment being a problem in Louisiana as it is elsewhere, we have had to develop a local medical consultant and clinician contractural arrangement for practically every unit. We believe this is desirable and brings the local doctors into a closer relationship with our health problems as well as those of the community.

The State Department of Hospitals is making use of the new clinics in their development of outpatient services for patients recently discharged from mental hospitals. The State Welfare Department also requests the use of these facilities for their local medical welfare boards to screen applicants for the state medical care program.

In practically all of the health center plans, where funds were available, auditoriums and meeting rooms were included to encourage local agencies and organizations interested in health programs to utilize them for their activities. This has been very much appreciated, particularly in smaller communities where such facilities are at a premium.

We will continue to strengthen and support local health units through adequate and carefully planned district, regional, and state in the established basic and legally required programs through our present regional general consultant staff of nurses, sanitarians (this includes a state sanitary survey team), and records consultants; there are four such staffs operating out of decentralized regional offices to be near their assigned areas. Specialists have been gradually added to these areas including public health engineers, nutritionists, milk sanitarians, and health educators. Two entomologists are also available to the parishes on a bi-regional state basis as well as an Insect Vector Control Team to promote local programs in such activities, along with dog and rabies control that are required by state law.

On a state level, public health laboratory services are available through a central laboratory and five strategically located branch laboratories, all in new modern, well equipped facilities (except one) built in conjunction with the Health Center construction program and located with the larger health centers and regional offices. We might add that, in addition to usual complete public health bacteriologic and serologic diagnostic services available in all the labo-

ratories, the central laboratory provides pathologic tissue diagnosis for physicians, virus culture service and chemical analysis for the Food and Drug Program. These services are also available to physicians without charge.

Further state and regional level services to the health units that have been gradually expanded are diagnostic and treatment clinics for the handicapped children program and the Tuberculosis Control Service. Patient referrals are accepted from private physicians as well as our local clinics for one visit. After the initial work-up visit, patients who are screened as eligible for treatment under the program receive complete follow-up through the local health units. A state level public health nurse consultant has been added to the handicapped children field and has developed a pilot rheumatic heart disease control clinic in the New Orleans area, which will eventually be expanded to the other area clinics. Incidentally, as funds and trained staff become available, other special services can be added to these same basic area consultant and treatment centers.

Another relatively recent state-wide consultant service has been the expansion of the Industrial Health and Safety Section program on safety to a home safety program in selected pilot parishes; this includes the promotion of area poison control centers. A state level Epidemiology Team, including a public health veterinarian, has been available for some time for routine communicable disease control aid as well as emergency epidemic assistance to parish staffs.

These are intended only as examples, and we feel sure other states can repeat the same story, of how the traditional type of health unit structure that has been promoted in Louisiana to its present 100 per cent coverage can be developed to meet the present and future challenges in community health problems.

ANDREW HEDMEG, M.D., M.P.H., F.A.P.H.A.
Director, Division of Local Health Services, Louisiana State Board of Health, New Orleans

TO THE EDITOR:

The purpose of this communication is to make known the existence of the Association for Pediatric Ambulatory Service. This organization (formerly the Association of Pediatric Out-Patient Directors) has as its objective, the promotion of improved patient care, teaching and research in ambulatory pediatrics. The association was formally organized in Chicago on October 18, 1960; is independent and unaffiliated with any other pediatric organization. The charter members are individuals whose interests and activities are for the most part concerned with Out-Patient Department functions. Membership in the association is open, upon application, to others interested in various aspects of ambulatory pediatrics.

Meetings of the association will be held annually in conjunction with the spring meetings of the American Pediatric Society and the Society for Pediatric Research. The annual meeting will consist of two parts:

1. An open scientific program at which papers dealing with teaching, patient care and research in ambulatory pediatrics will be presented.
2. A business meeting for members of the organization.

Communications for further information concerning the association should be addressed to Dr. Frederick Blodgett, Secretary, Grace New Haven Community Hospital, Howard Avenue, New Haven, Conn.

RICHARD W. OLMSTEAD, M.D.
Director, Out-Patient Department, St. Christopher's Hospital for Children, Philadelphia, Pa.

ASSOCIATION NEWS

APHA ANNUAL MEETING

Detroit, Michigan

November 13-17, 1961

ACTION ON RESOLUTIONS IN 1960

The tabulation below covers all resolutions submitted to the Resolutions Committee in 1960. The first 30 listed were received by the committee before August 31, the deadline date in 1960 for submission of policy resolutions (60 days before the opening date of the Annual Meeting). Nonpolicy resolutions, such as the thirty-first one listed, may be received up to the established time of closing of the resolutions box at the Annual Meeting. Acting in accordance with rules of procedure the Governing Council voted to waive the deadline date for submission of policy resolutions with regard to the final resolution listed in the table. The numbers assigned to resolutions (1 through 31) refer to the order in which they were publicly read on October 31 at the 88th Annual Meeting. Rules for processing resolutions were printed in the February, 1959, issue of the American Journal of Public Health on pages 269-272.

The phrase "report adopted" means that the Governing Council approved the committee's recommendation to refer a resolution. The complete text of the 1960 resolutions approved by the Governing Council follows this tabulation.

Titles, Originators, and Disposition of All Resolutions Submitted in 1960

Title of Resolution	Originator	Committee Action	Governing Council Action
1. Leadership in Medical Care	Western Branch	Covered by Policy Statement on Medical Care. Therefore no action recommended.	No action
2. Narcotic Control	Western Branch	Referred to Mental Health Section	Report adopted
3. Promotion of Public Immunization	Western Branch	No action recommended at this time	No action
4. 1959-1961 Tabulations of Vital Statistics	Statistics Section	Recommended	Adopted
5. Extension of Home Nursing Service	Public Health Nursing Section	Revised and recommended	Adopted

Title of Resolution	Originator	Committee Action	Governing Council Action
6. Organization Patterns in Health Agencies	Public Health Nursing Section	Referred to PAC on Public Health Administration and Public Health Nursing Section	Report adopted
7. Financial Assistance for Education Programs	Public Health Nursing Section	Recommended new resolution to replace 1959 Resolution on Financial Assistance to Educational Institutions	Adopted
8. Financing Home Care Services	Public Health Nursing Section	Revised and recommended	Adopted
9. Dental Facial Problems	Dental Health Section	Referred to PAC on Child Health and Dental Health Section for a general statement on handicapping conditions	Report adopted
10. Regulation of Denturists	Dental Health Section	No action recommended. Not a general problem.	No action
11. Misleading Advertising of Health Products and Services	Dental Health Section	Revised and recommended	Adopted with clarifying amendments
12. Defense Against Disaster	PAC on Health Services in Disaster	Revised and recommended	Adopted
13. Role of Public Health Educator in Mental Health Programs	Health Education Section	Referred to PAC on Mental Health and Health Education Section	Report adopted
14. Alcoholism as a Public Health Problem	Health Education Section	Referred to Subcommittee on Alcoholism of PAC on Chronic Disease and Rehabilitation and to Health Education Section	Report adopted
15. Suicide as a Public Health Problem	Health Education Section	Referred to PAC on Mental Health and Mental Health Section	Report adopted
16. Strengthening Professional Public Health Associations	Committee on Affiliated Societies and Regional Branches	Recommended	Adopted
17. Authority for Sanitary Control of Milk	Engineering and Sanitation Section	Revised and recommended	Adopted
18. Compulsory Pasteurization	Engineering and Sanitation Section	Recommended	Adopted
19. Federal Milk Sanitation Legislation	Engineering and Sanitation Section	Revised and recommended	Adopted

Title of Resolution	Originator	Committee Action	Governing Council Action
20. World-Wide Water Supply Programs	Engineering and Sanitation Section	Recommended	Adopted
21. Programs in Mental Retardation	Medical Care Section	Revised and recommended	Adopted
22. Adequacy and Economy in the Use of Drugs in Public Medical Care Programs	Medical Care Section	Revised and recommended	Adopted
23. Enabling Legislation for Consumer-Sponsored Prepayment Plans	Medical Care Section	Recommended	Adopted
24. Reduction of Barriers to Licensure of Qualified Physicians in the States	Medical Care Section	Recommended	Adopted
25. Educational Opportunities for Social Workers	Medical Care Section	(Combined with 7 above)	(See 7 above)
26. Accidents Among the Aging	PAC on Accident Prevention	Presidential letter	Report adopted
27. Action by WHO in Accident Prevention	PAC on Accident Prevention	Revised and recommended	Not adopted
28. Social Security Anniversary	MCH Section	Letter from President on anniversary. Action concerning future grants not recommended.	Report adopted
29. Plastic Film Products	MCH Section	Revised and recommended	Adopted
30. Air Pollution Control Program	Engineering and Sanitation Section	Revised and recommended	Adopted
31. Endorsement of Fifth World Conference on Health and Health Education	Health Education Section	Recommended	Adopted
32. Denial of Medical Care to Needy Children	MCH Section		Adopted after affirmative vote by two-thirds of Governing Council to suspend rules in accordance with required procedure

RESOLUTIONS

The following resolutions were adopted by the Governing Council, American Public Health Association, at its Eighty-Eighth Annual Meeting in San Francisco, Calif., November 2, 1960.

1959-1961 Tabulations

WHEREAS, vital statistics have been and continue to be an important base line in the development and efficient planning of public health programs and their administration, and

WHEREAS, the usefulness of vital statistics depends in large measure upon the availability of a description of a population in which the events occur, and such detailed population data are obtained for the United States, the states, and political subdivisions in the decennial Census of Population and Housing, and

WHEREAS, it would be desirable because of the availability of a population base for 1960 to plan the most exhaustive study possible of vital statistics for several years centered on the census year, and

WHEREAS, because observations of several years about a census year provide data of greater stability and reliability than do the observations of a single year, therefore be it

RESOLVED, that the American Public Health Association encourage the National Office of Vital Statistics to prepare detailed tabulations of vital statistics data for the years 1959-1961 combined in order to utilize fully the population base data for 1960 collected in the decennial census and to serve more adequately the needs of the various public health programs that rely on vital statistics for planning.

Extension of Home Nursing Service

WHEREAS, there is an increasing number of chronically ill and disabled persons in the population, and

WHEREAS, many of these persons could be better and more economically cared for at home than in an institution, and

WHEREAS, comprehensive home nursing care of the ill and disabled is an accepted responsibility of public health nursing, therefore be it

RESOLVED, that the American Public Health Association join with others in giving leadership and direction to voluntary agencies and health departments in developing or extending community programs to provide home nursing care.

Financial Assistance for Education Programs

WHEREAS, programs in our educational and training institutions must be strengthened and expanded to meet the critical shortage of adequately trained professional personnel in the health field, and

WHEREAS, financial assistance to these programs is essential if they are to be strengthened and expanded, and

WHEREAS, there is critical need for increased recruitment of competent professional personnel to the field, therefore be it

RESOLVED, that the American Public Health Association support and endorse sound federal legislation to provide financial assistance to programs for securing needed physical facilities, for strengthening and expanding educational and training programs in qualified institutions, and for scholarships and traineeships as a means of recruitment of needed professional personnel in the health fields.

Financing Home Care Services

WHEREAS, advances in medical science have made home care feasible for many types of illness and have shortened the period of hospitalization in others, and

WHEREAS, official and voluntary agencies recognize the need to develop more adequate services for the care of patients out of the hospital, particularly for the chronically ill and aged, and

WHEREAS, this type of home care service needs adequate financing which can be made possible in part through collection of fees and contracts, and

WHEREAS, existing legal restrictions in some localities limit full use of such funds, therefore be it

RESOLVED, that the American Public Health Association cooperate with appropriate official and voluntary agencies and professional organizations in the exploration of methods of financing programs of home care services including legislation, when needed, to permit participation in establishing contracts for service or providing for collection of fees or both.

Misleading Advertising of Health Products and Services

WHEREAS, the use of certain so-called health products, and medical and dental proprietaries and services is being promoted by misleading advertising of therapeutic claims which have not been supported by scientific evidence, and

WHEREAS, the use of these products by the public may lead to a false sense of health protection or benefits, and

WHEREAS, scientific and professional organizations having competence in testing such products have denounced these health benefit claims and have made specific recommendations to counteract their promotion and use, therefore be it

RESOLVED, that the American Public Health Association support vigorous enforcement of existing laws and regulations relating to misleading advertising of so-called health products and services, additional legislation where necessary, and professional and public efforts to control and minimize the misleading promotion of health products and services.

Defense Against Disaster

WHEREAS, adequate preparation to meet the effects of natural disasters or of enemy attack is a public responsibility, and

WHEREAS, such disasters or attack constitute a threat to the public health, and

WHEREAS, stability and continuity in organizing, recruiting, training, and maintaining Civil Defense forces require the leadership of paid and trained personnel, and

WHEREAS, public health officers and their staffs are uniquely equipped to appreciate the health aspects of the problem, organize these parts of the program, utilizing community resources and technics of public health education, therefore be it

RESOLVED, that health departments be encouraged to plan jointly with other official and voluntary agencies and professional groups with disaster relief responsibilities to minimize the adverse health effects of natural disasters or of enemy attack, and be it further

RESOLVED, that federal, state, and local administrations encourage and support the addition to public health staffs of personnel to accept delegation of responsibilities for health aspects of Civil Defense and natural disasters.

Strengthening Professional Public Health Associations

WHEREAS, it is essential to the successful development of public health at any level—local, state, regional, and national—that there be a strong professional organization of those engaged in providing community health services, and

WHEREAS, the strength of any organization is largely dependent upon its membership, both in the qualifications of individuals and in their numbers, and

WHEREAS, the interest and support of the directors of health departments is important to the development of public health programs and representative organizations, therefore be it

RESOLVED, that the American Public Health Association urge all health administrators to promote membership of their staff members in professional public health associations—local, state, regional, and national—and be it further

RESOLVED, that health administrators be urged to encourage and assist their staff members to participate actively in these public health associations.

Authority for Sanitary Control of Milk

WHEREAS, protecting the healthful and sanitary quality of milk is an essential and basic public health responsibility, and

WHEREAS, public health agencies have the technical skill and professional ability and interest required to carry out these functions successfully, and

WHEREAS, consideration is being given in various states and local areas to adoption of legislation assigning this important function to agencies whose primary function has been fostering the agricultural economy and favorable marketing conditions for agricultural products, and

WHEREAS, milk and food sanitation should be carried out by agencies whose primary objective is to supervise, encourage, and require healthful and sanitary practices, therefore be it

RESOLVED, that the American Public Health Association recommend that at all levels of government, statutory provisions place in health agencies responsibility for the healthful quality and sanitary control of milk.

Compulsory Pasteurization

WHEREAS, milk is a highly perishable food product which, because it is readily con-

taminated with disease producing organisms, has been an important agent in the spread of disease, and

WHEREAS, the incidence of milk-borne disease has been markedly reduced by the application of sanitary control measures, including pasteurization which is relied upon as the final public health safeguard, and

WHEREAS, the American Public Health Association has been on record since 1924 as endorsing the pasteurization of milk supplies for human consumption, and

WHEREAS, certain producers of raw milk and "health faddists" have been advocating the sale of raw milk to the final consumer and, in addition, have been seeking legislative changes at both state and local levels to permit the sale of raw milk in jurisdictions where compulsory pasteurization is now required, therefore be it

RESOLVED, that all states and municipalities be urged to include in their milk laws and regulations a requirement that all fluid milk sold to the final consumer or used in the preparation or manufacture of milk products be pasteurized.

Federal Milk Sanitation Legislation

WHEREAS, the Congress has been considering various legislative proposals aimed at preventing unwarranted use of sanitation regulations as trade barriers, and

WHEREAS, the "National Milk Sanitation Act" considered by the 86th Congress would accomplish that objective, and

WHEREAS, said act would also provide for sound public health requirements and effective administrative procedures without abridging the rights of states and localities, now therefore be it

RESOLVED, that the American Public Health Association favor enactment of legislation embodying the principles of the "National Milk Sanitation Act" which was considered by the 86th Congress of the United States.

World-Wide Water Supply Program

WHEREAS, water-borne diseases are major causes of disability and death in many of the less economically developed countries of the world, and

WHEREAS, safe and adequate water supplies are essential not only to the control of these diseases, but also for the social and economic development of the countries, and

WHEREAS, the United States government is collaborating in the development of economically sound and administratively feasible community water supply programs in many countries through the International Cooperation Administration and is making substantial financial contributions to special accounts of the World Health Organization and the Pan American Health Organization for technical assistance in water supply activities, therefore be it

RESOLVED, that appropriate agencies of the United States government be commended for support of these world-wide water supply programs and that they be urged to give continued vigorous support.

Programs in Mental Retardation

WHEREAS, mental retardation is a recognized public health problem, and

WHEREAS, the complex research, prevention, care, and rehabilitation aspects of mental retardation require the coordinated efforts of many agencies and adequately trained health, education, and social service personnel, therefore be it

RESOLVED, that state and local departments of health and departments of mental health, working with other official and voluntary agencies, should assume full responsibility for the promotion of research, education, and services for the mentally retarded, and be it further

RESOLVED, that programs for training of professional health personnel for service in mental retardation work be expanded.

Adequacy and Economy in the Use of Drugs in Public Medical Care Programs

WHEREAS, the expenditures for drugs in public medical care programs frequently equal and occasionally exceed the expenditures for physician services, and

WHEREAS, surveys in such programs have indicated extensive use of nonspecific drugs and unnecessarily high expenditures resulting from prescription of drugs by trade or proprietary names instead of by nonproprietary or generic names, therefore be it

RESOLVED, that the American Public Health Association encourage administrators of public medical care programs to seek the cooperation of the medical and pharmaceutical professions in reviewing policies and practices in the prescription and provision of drugs, in order to assure that only therapeutically effective drugs in appropriate amounts and at the lowest practical cost be made available to persons under care, and be it further

RESOLVED, that the American Public Health Association encourage welfare, health, and other public agencies administering public medical care programs to adopt the policy of limiting public expenditures for drugs to those which are prescribed by their nonproprietary or generic names, and which are included in the U. S. Pharmacopeia, National Formulary (or Accepted Dental Remedies) or, if not included, have been approved by qualified formulary committees or by similar committees of experts.

Enabling Legislation for Consumer-Sponsored Prepayment Plans

WHEREAS, most state laws governing prepaid hospital and medical service programs were enacted when health insurance was in an early stage of development, and

WHEREAS, most such legislation was sponsored by hospital agencies and medical societies, and restricts the establishment and vests the control of the programs exclusively or mainly in organizations representing the providers of service, and

WHEREAS, there is need for more experimentation on effective organization of health services and on the provision of fully prepaid comprehensive health care, and

WHEREAS, nonprofit prepayment health service plans under consumer auspices have shown a willingness to experiment with new forms of organization and the extension of their benefit programs to comprehensive care, therefore be it

RESOLVED, that the American Public Health Association support the revision of state laws to permit the development of nonprofit prepayment health service plans under consumer auspices.

Reduction of Barriers to Licensure of Qualified Physicians in the States

WHEREAS, the basic provisions of current medical licensure laws were enacted by most states at a time when there were many substandard medical schools, and when such legislation was urgently needed to protect the public against inadequately trained physicians, and

WHEREAS, medical education has improved vastly since the adoption of such licensure laws, and high standards of medical education are now protected and maintained by carefully devised systems of accreditation, and

WHEREAS, the present acute national shortage of well trained physicians is expected to persist and cannot be overcome for at least one or two decades, and many states have insufficient numbers of physicians to meet the needs of their populations, and

WHEREAS, the medical licensure laws of some states are unduly restrictive in light of the advances in medical education, and interpose unwarranted difficulties for communities which need to attract physicians, therefore be it

RESOLVED, that the American Public Health Association recommend to the Council of State Governments that the council sponsor the establishment of a commission: To study the present state of medical licensing practices; to consult with the Federation of State Medical Boards of the United States, the Council on Medical Education and Hospitals of the American Medical Association, and with other interested professional and academic associations, agencies, and institutions; to prepare a model medical licensing law; and to encourage its uniform adoption by the states; so as to protect the public interest and to minimize the barriers to licensure of qualified physicians in the several states.

Plastic Film Products

WHEREAS, the widespread use of certain plastic film products continues to present a serious hazard, particularly to infants and young children, therefore be it

RESOLVED, that the American Public Health Association recommend that national and state legislation be adopted to require adequate warning labels on those plastic film products which may be hazardous and that educational efforts to acquaint the public with the danger of such products to young children be intensified.

Air Pollution Control Program

WHEREAS, air pollution is now a major environmental health problem in many areas and its control is a responsibility of government, and

WHEREAS, air pollution is increasing in magnitude and extent and the resources of all levels of government are required to protect the public from this defect of the environment, and

WHEREAS, a primary objective of an air pollution program should be to protect and preserve the health and physical well-being of the public, and

WHEREAS, industry and the public should assume responsibility for curbing air pollutions created by their activities and should support efforts through government for air pollution control programs to be truly effective, therefore be it

RESOLVED, that air pollution control activities should be administered by agencies at all levels of government which have the technical competencies, funds, and legal responsibility to deal effectively with air pollution problems, and be it further

RESOLVED, that there is urgency that public health agencies provide leadership in dealing with problems of air pollution and assume appropriate responsibilities in the field of air pollution control.

Endorsement of Fifth World Conference on Health and Health Education

WHEREAS, the International Union for the Health Education of the Public will hold its Fifth World Conference which will be on Health and Health Education in Philadelphia, Pa., from June 30 to July 7, 1962, and

WHEREAS, the World Health Organization will co-sponsor this conference, and

WHEREAS, the conference will bring together professional groups that represent all public health disciplines who will examine the major health problems of today and educational implications inherent in the solution of these problems, and

WHEREAS, this international meeting will offer opportunities for the exchange of professional ideas and information, and

WHEREAS, there will be a great need for professional public health workers in this country to extend invitations to their colleagues from around the world to visit their organizations to observe the operations and to discuss the basic programs, therefore be it

RESOLVED, that the American Public Health Association endorse the World Conference on Health and Health Education to be held in Philadelphia in 1962 and urge all professional public health workers to lend support to the American National Council for Health Education of the Public, the American member of the International Union, in the development and success of this conference.

Denial of Medical Care to Needy Children

WHEREAS, criticism of parental conduct should not be considered valid justification for denying medical care to needy children, therefore be it

RESOLVED, that the American Public Health Association call upon all states in their provision of essential health services to children, to do so without regard to the morality of their parents.

In Memoriam

WHEREAS, since the Eighty-Seventh Annual Meeting of the American Public Health Association there has been recorded the irreparable loss of 95 Fellows and members, all of whom have been cherished participants in this professional society, many having made outstanding contributions to the success of the Association, therefore be it

RESOLVED, that the Association express its deep regret at this loss, and be it further

RESOLVED, that the attached list of those deceased constitute a part of this resolution.

Deceased Members and Fellows—October, 1959 to October, 1960

Name	Member	Fellow
Isidor Abrahamer, M.D., Staten Island, N. Y.	1952	
Andrew F. Allen, M.P.H., Delmar, N. Y.	1916	1923 Charter
J. Lewis Amster, M.D., New York, N. Y.	1918	1934
David R. Barglow, M.D., Trinidad, Colo.	1942	
Daniel S. Baughman, M.D., Madison, S. D.	1945	
Charles H. Benning, M.D., M.P.H., Wilmington, Del.	1923	1929
Joseph E. Bishop, New Brunswick, N. J.	1954	
Manfred Bowditch, New York, N. Y.	1928	
Earl W. Brian, M.D., Raleigh, N. C.	1960	
W. W. Browne, Ph.D., Yonkers, N. Y.	1911	1923 Charter

Name	Member	Fellow
Herman N. Bundersen, M.D., Chicago, Ill.	1917	1924
Russell J. Callander, M.D., Solana Beach, Calif.	1942	
Eleanor A. Campbell, M.D., New York, N. Y.	1926	
James B. Carroll, D.D.S., M.P.H., Atlanta, Ga.	1958	
Joseph H. Coffey, Atlanta, Ga.	1950	
Nicholas P. Cosco, M.D., Middletown, N. Y.	1940	
Roland R. Cross, M.D., Springfield, Ill.	1937	
George A. W. Currie, M.D., Toronto, Ont., Canada	1948	1952
George M. DeYoung, M.D., Ph.D., Peoria, Ill.	1951	
Hugh J. Deeney, Jr., Corvallis, Ore.	1960	
Mrs. Saidie Orr Dunbar, Portland, Ore.	1924	
Ernest D. Easton, Maplewood, N. J.	1916	
Ernest G. Eggert, Macon, Ga.	1925	1930
George M. Eisenberg, Sc.D., Philadelphia, Pa.	1954	1958
Antonio Ejercito, M.D., Manila, Philippines	1957	
John E. Elmendorf, Jr., M.D., Southern Pines, N. C.	1939	
Thomas Fansler, M.A., Chicago, Ill.	1951	1954
Carl R. Fellers, Ph.D., Amherst, Mass.	1918	1923
Esther M. Finley, Buffalo, N. Y.	1941	1947
William P. Forrest, M.D., D.P.H., Ayrshire, Scotland	1947	1953
B. L. Frank M.D., Chicago, Ill.	1949	
Martha A. Frioux, University City, Mo.	1954	
G. Nelson Furbeck, M.D., M.P.H., Bay City, Tex.	1951	1954
Mary S. Gardner, R.N., Providence, R. I.	1918	1926
Albert S. Gray, M.D., West Hartford, Conn.	1928	1932
Morris Greenberg, M.D., M.S.P.H., New York, N. Y.	1941	1950
Orion R. Gregg, M.D., Norman, Okla.	1948	
Dean Halliday, Cleveland, Ohio	1947	
William H. Hay, Cleveland, Ohio	1948	
Mrs. Jane Heffernan, R.N., New Orleans, La.	1935	
Edward Hochhauser, New York, N. Y.	1928	
Daniel G. Howell, Los Angeles, Calif.	1956	
Rollin W. Hoyt, Boston, Mass.	1932	
Clara Jacobson, M.D., Chicago, Ill.	1920	
Ransom J. Jones, M.D., M.P.H., Kingston, N. C.	1936	1952
H. E. Kleinschmidt, M.D., Mystic, Conn.	1922	1923
Earl Loman Koos, Ph.D., Lubbock, Tex.	1951	1955
Eugene J. Lebowitz, Los Angeles, Calif.	1958	
Robert T. Legge, M.D., Berkeley, Calif.	1919	
Wendelin G. Luckner, M.D., Stafford Springs, Conn.	1944	
Janet Welch Mackie, M.D., Washington, D. C.	1944	
Floyd W. Mohlman, Ph.D., Pacific Palisades, Calif.	1929	
Henrietta Morris, Sc.D., Corvallis, Ore.	1934	
Mrs. Wilma A. Mullins, Des Moines, Iowa	1954	
Timothy F. Murphy, M.D., Washington, D. C.	1929	1930
S. Stewart Murray, M.D., D.P.H., Vancouver, B. C., Canada	1939	
Charles A. Neafie, M.D., M.S.P.H., Pontiac, Mich.	1918	1923
Angelo M. Perri, M.D., M.P.H., Philadelphia, Pa.	1943	1945
Louisa Ellen Perritt, R.N., Muskogee, Okla.	1918	
William H. Pickett, M.D., M.P.H., Gainesville, Fla.	1914	1923
Clara C. Plichta, M.A., Baltimore, Md.	1958	
Dr. Boris Pliskin, Tel Aviv, Israel	1954	
John J. Powers, M.D., M.P.H., Albany, N. Y.	1951	
Bernard E. Proctor, Ph.D., Cambridge, Mass.	1928	1933

Name	Member	Fellow	
Adrienne C. Proskine, Schenectady, N. Y.	1952		
Ernest W. Prothro, M.D., Detroit, Mich.	1926		
Philip J. Rafle, M.D., M.P.H., Riverhead, N. Y.	1934	1940	
Edwin G. Ramsdell, M.D., White Plains, N. Y.	1920		
Edward Records, V.M.D., Reno, Nev.	1942		
Colonel Mathais F. Regner, M.D., New York, N. Y.	1957		
Elliott S. Robinson, M.D., Ph.D., Haverhill, N. H.	1923	1934	
Burton L. Rockwell, M.D., Oriskany Falls, N. Y.	1934		
John C. Rogers, M.D., Ph.D., Henderson, Ky.	1959		
Cassandra, Ritter, M.A., Lawrence, Kans.	1923	1939	
Wilmer H. Schulze, Phar.D., Baltimore, Md.	1933	1948	
John C. Sease, M.D., Newberry, S. D.	1937		
Kenneth L. Senior, M.S., Philadelphia, Pa.	1952		
Winfield K. Sharp, Jr., M.D., Nashville, Tenn.	1936		
Bjorn Sigurdsson, M.D., Reykjavik, Iceland	1946		
Colonel J. F. Siler, M.C., Washington, D. C.	1920		
Sammy L. Simpson, Winter Haven, Fla.	1957		
Louise Sitzenstock, R.N., Anaheim, Calif.	1919	1925	
Vincent M. Small, M.D., M.P.H., Gallatin, Tenn.	1956		
Oscar D. Stage, D.D.S., Eggertsville, N. Y.	1950		
William A. Starin, Ph.D., Columbus, Ohio	1933	1943	
Henry W. Stevens, White Plains, N. Y.	1958		
Margaret P. Stimmel, Fort Collins, Colo.	1944		
Earl M. Strader, Wichita, Kans.	1952		
Howard A. Streeter, M.D., Manchester, N. H.	1915	1922	Charter
Horace C. Swan, M.D., Hartford, Conn.	1917	1924	
Benjamin Tappan, M.D., Baltimore, Md.	1919		
Stanley E. Telser, M.D., Chicago, Ill.	1955	1957	
Dr. Pruech Vann, Phnom Penh, Cambodia	1958		
William F. White, M.D., Wellsboro, Pa.	1959		
Constantin P. Yaglou, Boston, Mass.	1925	1940	

Alcohol at the Wheel

Traffic accidents in European countries often are the results of the driver's consumption of alcoholic beverages. In France, 50 per cent to 60 per cent of the fatal accidents (or even 80 per cent of them around Paris) are the fault of drivers who are under the influence of alcohol.

Claudius F. Mayer. Around the World. Military Medicine (Nov.), 1959.

POLICY STATEMENT

The following policy statement was adopted by the Governing Council, American Public Health Association, at its Eighty-Eighth Annual Meeting in San Francisco, Calif., November 2, 1960.

Accidents—A Public Health Problem

The American Public Health Association, believing that death and disabilities due to accidents pose a challenge to public health workers equal in scope to the prevention of the infectious diseases and the control of chronic diseases, and recognizing that many agencies and many types of professional workers have an interest in and a direct responsibility for preventing accidents and that the public health workers can make a vital contribution to accident prevention,

RECOMMENDS THAT:

Accident prevention be recognized as a major public health problem and that all component units of the American Public Health Association cooperate to improve accident prevention activities at the local, state and national level;

State and local health departments, the Public Health Service, and the Children's Bureau increase the size and scope of their accident prevention activities to be more commensurate with the magnitude of the problem and with the level of activity that has been or is being achieved in the field of infectious and chronic disease;

All state health departments and large local health departments provide that:

Their accident prevention programs be headed by a full-time administrator qualified by training and experience to discharge this responsibility adequately and that a wide range of consultant services be made available to the administrator, and

Active educational efforts be designed to dispel ignorance about the basic causes of accidents and the role people play in their causation, devised and carried out in cooperation with other interested agencies and organizations, and

Research efforts be significantly increased in number, scope, and depth and embrace the study and control of all types of accidents regardless of their place of occurrence, and

Greater attention be directed to identifying the human factors involved in accidents, and to developing active methods of coping with them, and that in this concern full consideration be given to the structures, implements, and conditions created by man himself which make accidents more likely to occur, and

Increased efforts be made to enlist the cooperation of physicians and state and local medical societies in accident prevention activities;

Increased cooperation be promoted by official agencies with the National Safety Council and state and local safety councils, which have played so important a role in accident prevention; and

Additional funds be provided for the Public Health Service and the Children's Bureau to encourage and support additional research efforts and to assist state and local health departments in developing more effective accident prevention programs.

APHA Membership Application Blank on page XXIX

NEWS OF AFFILIATED SOCIETIES AND BRANCHES

APHA Affiliated Societies and Branches

Society and Secretary

ALABAMA PUBLIC HEALTH ASSOCIATION, Ralph Roberts, State Health Dept., Montgomery
ARIZONA PUBLIC HEALTH ASSOCIATION, Verona Massey, State Dept. of Public Health, Phoenix
ARKANSAS PUBLIC HEALTH ASSOCIATION, Mrs. Vada Russell, State Health Dept. Bldg., Little Rock
CALIFORNIA, NORTHERN PUBLIC HEALTH ASSOCIATION, Mrs. Joan Davis, City Health Dept., San Jose
CALIFORNIA, SOUTHERN, PUBLIC HEALTH ASSOCIATION, Dorothea Hansen, City Health Dept., Los Angeles 12
COLORADO PUBLIC HEALTH ASSOCIATION, Alice de Bruyn Kops, 4660 S. Delaware, Englewood
CONNECTICUT PUBLIC HEALTH ASSOCIATION, Shirley Thayer, R.N., 61 Arnold Way, West Hartford 7
CUBAN PUBLIC HEALTH SOCIETY, Dr. Raphael Calvo Fonseca, Calle 19 No. 511 Altos Vedado, Havana
FLORIDA PUBLIC HEALTH ASSOCIATION, Everett H. Williams, Jr., P. O. Box 210, Jacksonville
GEORGIA PUBLIC HEALTH ASSOCIATION, Mrs. Martha Power, State Health Dept., Atlanta 3
HAWAII PUBLIC HEALTH ASSOCIATION, Martin Covitz, 1018 Lunalilo Street, Honolulu
IDAHO PUBLIC HEALTH ASSOCIATION, Ralph Carpenter, 120 N. Capitol Blvd., Boise
ILLINOIS PUBLIC HEALTH ASSOCIATION, William J. Hixon, Evanston Health Dept., Evanston
INDIANA PUBLIC HEALTH ASSOCIATION, Malcolm J. McLelland, State Board of Health, Indianapolis
IOWA PUBLIC HEALTH ASSOCIATION, Lloyd Coe, Iowa Hospital Association, 1012 Liberty Bldg., Des Moines
KANSAS PUBLIC HEALTH ASSOCIATION, W. W. Wilmore, Kansas Tuberculosis and Health Assn., 1134 Topeka Ave., Topeka
KENTUCKY PUBLIC HEALTH ASSOCIATION, Miss Peggy Fisher, 275 E. Main St., Frankfort
LOUISIANA PUBLIC HEALTH ASSOCIATION, A. G. Owens, P. O. Box 1872, Monroe
MARYLAND PUBLIC HEALTH ASSOCIATION, C. Murray Wylie, M.D., 615 North Wolfe St., Baltimore 5, Md.
MASSACHUSETTS PUBLIC HEALTH ASSOCIATION, Mrs. Elizabeth K. Caso, Dept. of Health, Cambridge
MICHIGAN PUBLIC HEALTH ASSOCIATION, Howard Hilton, Washtenaw County Health Dept., County Bldg., Ann Arbor
MINNESOTA PUBLIC HEALTH ASSOCIATION, D. S. Fleming, M.D., State Dept. of Health, University Campus, Minneapolis
MISSISSIPPI PUBLIC HEALTH ASSOCIATION, H. E. Boone, P. O. Box 1700, Jackson
MISSOURI PUBLIC HEALTH ASSOCIATION, Mrs. Nadia Craver, 5th Fl., State Office Bldg., Jefferson City
MONTANA PUBLIC HEALTH ASSOCIATION, Thomas S. Willett, Montana Public Health District 1, Hardin
NEBRASKA PUBLIC HEALTH ASSOCIATION, Mrs. Jack Carey, Lincoln Dairy Council, 620 Sharp Bldg., Lincoln, Neb.
NEVADA PUBLIC HEALTH ASSOCIATION, Mrs. Elaine Walbrock, 101 W. Arroya, Reno
NEW JERSEY PUBLIC HEALTH ASSOCIATION, Waldo McNutt, M.P.H., Delaware River Drive, Frenchtown
NEW MEXICO PUBLIC HEALTH ASSOCIATION, Dan[illegible] T. Marley, P. O. Box 8066, Albuquerque
NEW YORK CITY, PUBLIC HEALTH ASSOCIATION OF, [illegible]ances Ann McVey, 4317 Robinson St., Flushing 55, N. Y.
NEW YORK STATE PUBLIC HEALTH ASSOCIATION, Carline Millican, Rochester Regional Office, State Health Dept., Rochester
NORTH CAROLINA PUBLIC HEALTH ASSOCIATION, Robert W. Brown, Box 7525, Asheville
NORTH DAKOTA PUBLIC HEALTH ASSOCIATION, Alice H. Peterson, M.D., State Dept. of Health, Bismarck
OHIO PUBLIC HEALTH ASSOCIATION, Mrs. June O'Donnell, 3516 Braddock St., Dayton
OKLAHOMA PUBLIC HEALTH ASSOCIATION, Bill Burk, 3400 North Eastern, Oklahoma City
OREGON PUBLIC HEALTH ASSOCIATION, Muriel David, City Bureau of Health, 203 N.E. 28th Ave., Portland
PENNSYLVANIA PUBLIC HEALTH ASSOCIATION, Emma J. Petach, R.N., 324 N. Second St., Harrisburg
PUERTO RICO PUBLIC HEALTH ASSOCIATION, Mrs. Mae de Acin, Apartado 211, San Juan 2
SOUTH CAROLINA PUBLIC HEALTH ASSOCIATION, Emily Anne Easterling, Richmond County Health Dept., Columbia
SOUTH DAKOTA PUBLIC HEALTH ASSOCIATION, Alice Brady, R.N., State Dept. of Health, Pierre
TENNESSEE PUBLIC HEALTH ASSOCIATION, C. B. Tucker, M.D., State Dept. of Health, 420 Sixth Ave., N., Nashville
TEXAS PUBLIC HEALTH ASSOCIATION, Joseph N. Murphy, Jr., State Dept. of Health, Austin
UTAH PUBLIC HEALTH ASSOCIATION, Katherine Brandon, M.D., P. O. Box 25, Foothill Station, Salt Lake City
VIRGINIA PUBLIC HEALTH ASSOCIATION, Robert M. Parker, 401 Colley Ave., Norfolk 7
WASHINGTON STATE PUBLIC HEALTH ASSOCIATION, Vance McCallister, 1509 Public Safety Bldg., Seattle 4, Wash.
WEST VIRGINIA PUBLIC HEALTH ASSOCIATION, Mrs. Katherine L. Brown, State Dept. of Health, Charleston 5
WISCONSIN ASSOCIATION FOR PUBLIC HEALTH, Paul Weis, RR No. 2, Waunakee
WYOMING PUBLIC HEALTH ASSOCIATION, Lee Holder, P. O. Box 2203, Cheyenne
MIDDLE STATES BRANCH, APHA, Thelma Luther, Dept. of Health, Des Moines, Iowa
SOUTHERN BRANCH, APHA, M. L. McDonald, Dallas Health Museum, Dallas, Tex.
WESTERN BRANCH, APHA, Robert G. Beaumier, 1309 Smith Tower, Seattle, Wash.

And Wyoming Makes 51

The APHA Governing Council at the 88th Annual Meeting approved the application for affiliation with APHA of two new state public health associations —Nevada and Wyoming. This action brought the number of Affiliated Societies and Regional Branches of APHA to 51. A cordial welcome to the APHA family is extended to both.

A brief report of the first meeting and the list of officers of the Nevada affiliate appeared in these columns in the December issue. News received now from the Wyoming Public Health Association is that at its organizational meeting, held in the fall of 1960, Mildred B. Ringo, associate professor of health and physical education, University of Wyoming, was elected president. Other officers are:

Vice-President—Evelyn Fergusen

Secretary—Lee Holder, M.P.H., assistant director, Division of Health Education, Wyoming State Department of Public Health, Cheyenne

Treasurer—Fred P. Spino, fiscal and person-

nel officer, Wyoming State Department of Public Health, Cheyenne

The first scientific meeting of WPHA is being scheduled for early spring, 1961. Officers may be addressed c/o P. O. Box 2203, Cheyenne.

LMNH?: Maryland

Call it conundrum or cryptogram, the abbreviation LMNH was the password for prospective delegates to the Sixth Annual Meeting of the Maryland Public Health Association (Baltimore, October 7), a joint venture last year with the Maryland Association of Sanitarians. Clues in the advance announcement: H stands for Health, L stands for Look, M for Mom, N of No. Put these together, the announcement suggested, relate them to the major topic—an analysis of communication and motivation for better health—and see if your interpretation of the message contained is the same as that of the "experts at message sending" on the program.

Principal communicator at the morning session was Gaylord W. Anderson, M.D., director, School of Public Health, University of Minnesota. His paper, "Action for Public Health" was discussed by representatives from the radio-TV, industrial, and fund-raising fields.

In an address at the luncheon session, Berwyn F. Mattison, M.D., executive director, American Public Health Association, asked the leading question, "How Much Health Do We Really Want?" Part of the problem: "In spite of the growing concern of public health authorities about the extent of chronic alcoholism and a growing mass of evidence of an association between cigarette smoking and lung cancer, the sale of these articles continues at an all time high." Part of the answer: "We cannot cling longer to our old idea of 'health' and be satisfied that all people will seek it out." (This paper is published in full in the November, 1960, issue of Baltimore Health News, Baltimore City Health Department.)

Delegates at the afternoon session were offered a choice between the opportunity to interview specialists in their fields at round table discussions and a symposium on environmental health programed by the Maryland Association of Sanitarians. At the latter, Russell H. Morgan, M.D., Johns Hopkins Hospital, spoke on radiation control programs; Mathew J. Bonese, D.V.M., district chief, Environmental Health, New Jersey Department of Health, on the 1959 outbreak of Eastern Equine Encephalitis in that state; and Emil T. Chanlett, professor of sanitary engineering, School of Public Health, University of North Carolina, on environmental factors affecting mental health.

J. Howard Beard, M.D., M.P.H., health officer, Anne Arundel County Health Department, Annapolis, succeeded Ferdinand A. Korff as president of MPHA. Other officers for 1960-1961 are:

President-Elect—Frank T. Jones, executive director, Maryland Tuberculosis Association

Vice-President—Charlotte Silverman, M.D., Dr.P.H., director of planning and research, Maryland State Department of Health

Secretary—C. Murray Wylie, M.D., Dr.P.H., assistant professor of public health administration, Johns Hopkins School of Hygiene and Public Health

Treasurer—H. B. McCauley, D.D.S., director, Bureau of Dental Care, Baltimore City Health Department

Representative to the APHA Governing Council—Perry H. Prather, M.D., M.P.H., director of public health, Maryland State Department of Health

A Luxury or an Economy?: Washington

Delegates to the silver anniversary conference of the Washington State Public Health Association (Spokane, October 2-4) were concerned with answers to the question: "Why Spend Money on Public Health?"

At the first general assembly, Berwyn F. Mattison, M.D., executive director,

American Public Health Association, began the conference's exploration of this theme by pointing out that basically the impetus for spending in public health can hardly be regarded as traditional. "The group of specially trained health workers making up today's health department is a relatively new phenomenon," he said. Moreover, "it is the very youth of our field which encourages the searching appraisals of function and support such as the query keynoting this meeting."

But a-building is a "fine, proud tradition of lives saved, family disruption avoided, of suffering and disability alleviated," and this kind of tradition is "most certainly" a reason to spend money for public health. Political support for public health funds is also growing "because many far-seeing leaders in politics agree with Disraeli that 'The strength of the nation rests in the health of its people'."

Dr. Mattison supported the thesis that "Disease prevention is not a luxury for any community . . . it is an economy," by citing programs where economic advantage to the community had gone hand in hand with the improved health of its citizens. In sum, "Every time we find an early undiagnosed case of TB or venereal disease and get him under treatment. . . when we educate adults to seek periodic medical exams and convert, in so doing, what might otherwise be an untreatable cancer to a treatable one through early discovery . . . the costs are repaid, usually manyfold, not only in preservation of a human resource, but in cash savings as well."

A symposium, "Utilization of the Public Health Dollar," followed, chaired by Hampton H. Trayner, M.D., health officer, Spokane City Health Department. James K. Shaefer, M.D., medical director and chief, Division of General Health Services, PHS, Washington, D. C., and R. T. Ravenholt, M.D., director, Epidemiology and Communicable Disease Control, Seattle-King County Health Department, were participants.

Five of the seven sections (statisticians, health educators, health officers, nurses, laboratory, sanitation, and social workers) included discussions on the conference question mark in their scientific sessions.

At the banquet, honorary life memberships were given to Mrs. Margaret Allen, Miss Maude Foss, and Mr. Sandy Young. The Washington State Public Health Association award for outstanding contribution to public health was presented to Mr. Ed Munro, state legislator.

Panels discussed "Competition for the Tax Dollar" and "Public Health and the Migratory Worker" at the second general assembly which was chaired by E. O. Ploeger, M.D., health officer, Spokane County Health Department. At the annual business meeting which followed, Robert E. Mytinger, M.P.H., director, Western Regional Office of the APHA, presented a Western Branch-APHA news report and outlined the services of the American Public Health Association and the advantages of membership. A conference summary, under one title of "Well, Why Do We?," was conducted by Dr. Mattison. The membership committee reported 417 regular and 16 sustaining members for the year. Resolutions on municipal financing problems, registration of sanitarians, fluoridation, malpractice and liability protection for public health workers, and the development of a medical examiner system in the state, were among those adopted.

Tom Drummey, supervisor, Special Health Services, Washington State Department of Health, succeeded Vernon E. Michael, M.D., health officer, Benton-Franklin District Health Department, as president of WSPHA. Other officers for 1960-1961 are:

President-Elect—Caesar Branchini, Benton-Franklin District Health Department, Pasco

Secretary—Vance McCallister, Seattle-King County Health Department, Seattle
Treasurer—Jack B. Hatlen, lecturer in public health, University of Washington, Seattle

Oregon: Child Health, Local Units

Nearly 250 persons registered for the annual meeting of the Oregon Public Health Association (Salem, September 29-October 1), and some 50 speakers participated in the program. Clair V. Langton, Dr.P.H., was program chairman.

At one of the largest assemblies of the meeting, Dr. Carl G. Ashley spoke on the "Implications of Recommendation From the White House Conference for Children in Oregon." The conference, he said, pointed up the need for more active health departments in the state and for an expansion of crippled children's services. During the panel discussion that followed, Florence Beardsley, representing the field of education, emphasized "the need to create a climate that will allow people to accept the results of research." Bertha Byrne, executive secretary of the Oregon Nurses Association, stated that the conference had recognized certain ideals in future health programing but had not given due consideration to present needs. Maynard Schiffer, M.D., of the Oregon State Medical Society, discussed the place of community health councils in implementing programs.

Harold Osterud, M.D., M.P.H., chaired a session which considered current needs to revise the Emerson Report, "Local Health Units for the Nation." James K. Shafer, M.D., chief, Division of General Health Services, Public Health Service, and Berwyn F. Mattison, M.D., executive director, American Public Health Association, were the main speakers. In the panel discussion which followed, Samuel Osgood, M.D., director, Local Health Services, Oregon State Board of Health, said that Oregon needs: to have more health officers skilled in the technics of community health appraisal and community organization; to amalgamate smaller existing health units or unorganized areas into multicounty or city-county health units of larger size; and to develop teams of well trained specialists financed by the state, which can be assigned to work under the direction of the local health officer for considerable periods of time to attack specific, demonstrated problems.

Mildred Ross, staff executive, Portland Community Council, presided over a panel discussion on communications which Mark Howard, information director, Oregon State Board of Health, moderated.

At the banquet, the annual Oregon Public Health Association Award was presented to Clair V. Langton, Dr.P.H., director, Health and Physical Education Division, Oregon State College, by Adolph Weinzirl, M.D., 1959 recipient. Dr. Langton was also installed as 1960-1961 OPHA president, succeeding Gatlin R. Brandon. Other officers for 1960-1961 are:

President-Elect—Kenneth C. Ross, M.P.H., executive secretary, Oregon Tuberculosis and Health Association, Portland
Vice-President—Vivien E. Runte, R.N., public health nurse epidemiologist, Oregon State Board of Health, Portland
Secretary—Muriel S. David, R.N., Eastside Nursing Division, City Bureau of Health, Portland
Treasurer—Fred Klaus

The conference concluded with a discussion by Don Willner, Portland attorney, of the migratory workers' problems in Oregon. He suggested that a statewide conference be held in 1961 to review migratory legislation in light of Oregon's recent experiences.

Robert E. Mytinger, M.P.H., director, Western Regional Office, Western Branch, American Public Health Association, joined Dr. Mattison at the conference in representing the Association.

EMPLOYMENT SERVICE

The following pages present information for those seeking public health personnel and for those seeking positions in public health. Other information concerning vacancies and personnel available is on file in the Association office. Anyone wishing to have the benefit of this additional information can obtain it by writing to the Vocational Counseling and Placement Service of the Association.

Advertising space in these pages is available at special rates for the use of employers or individuals. The charges are $5 for the first 50 words or fraction thereof and $1 for each additional 10 words or fraction thereof. There is no charge to members or Fellows of the Association who desire to utilize the **Positions Wanted** portion of these pages. **Closing date** for receipt of advertisements is the first of the month preceding the desired month of publication. **All correspondence should be sent to the American Public Health Association, 1790 Broadway, New York 19, N. Y.**

POSITIONS AVAILABLE

Public Health Physician—to act as chief, Division of Preventive Medicine, in San Diego County Public Health Department. Broad administrative experience with a recognized local health department required. Annual salary $14,616-$16,116, plus 10 per cent if certified by the American Board of Preventive Medicine and Public Health. Write County Civil Service, Room 403, Civic Center, San Diego 1, Calif.

Physician—to serve with Department of Health clinical team working with children having a variety of crippling conditions. Will have professional and administrative responsibility for operation of specified fields of crippled children services. Requires completion of general internship in an approved hospital and not less than two years' employment in pediatrics or completion of two-year internship in pediatrics and M.P.H. Also eligibility for license to practice medicine and surgery in Connecticut. Merit system, sick leave, annual vacation. Reply to B. Dearington, State Department of Health, State Office Bldg., Hartford, Conn.

Physician—with public health degree for environmental health work in university health service. Academic appointment available. Teaching, clinical practice optional. Write or phone Orville S. Walters, M.D., Director of Health Services, University of Illinois, 807 South Wright, Champaign, Ill.

Public Health Director—for Public Health Department in Portland, Maine, community of 80,000 and center of metropolitan area of about 150,000. Department staff of 37 engaged in progressive public health program, including active housing inspection and enforcement of minimum housing standards and environmental sanitation. Council-manager form of government since 1923. Health department enjoys excellent relationships with private and voluntary agencies, and a real civic interest in public health matters exists. Health department budget for 1960 totals $160,000. Portland offers an unparalleled opportunity for constructive professional work and for pleasant living. Degree in medicine required. Degree in public health or willingness to obtain graduate training in the field is desired. Salary open. Write Julian H. Orr, City Manager, City Hall, Portland, Maine.

Director—for progressive and well established County Health Department serving a rich agricultural-industrial area in southeastern Michigan; population 76,000. Eligibility for Michigan licensure, training and experience in public health required. Address: Lenawee County Health Department, 113 West Front St., Adrian, Mich.

Health Commissioner—County unit, serving 100,000, Hudson River Valley, with headquarters at Kingston, N. Y. This is an established unit with a well trained staff of 50. Experience and training for health officer required. Salary $14,000, plus necessary travel. For details write to Mr. Harry Kaplan, President, Ulster County Board of Health, 15 Main St., Kingston, N. Y.

Pediatrician—for State Health Department. To act as pediatric consultant within the agency and work with professional and lay groups in the field. Included in work: hospital standards, school health problems, statistical studies, future program planning. Starting salary $12,240. Ohio medical license, one-year internship, at least two years' graduate training required; preferably Board of Pediatrics or eligible. Civil service position, vacation, sick leave, annual salary increments, and retirement plan. Staff appointment to state university if eligible. Address inquiries to Division of Child Hygiene, Ohio Department of Health, Columbus 15, Ohio.

Health Officer—Starting salary $12,600-$15,000 depending on qualifications. Jackson County, Medford, Ore., in the heart of the beautiful Rogue River Valley, about equal distance from Portland and San Francisco.

M.D. and M.P.H. degrees, plus some public health administrative experience. Ability to secure medical licensure in Oregon under the merit system. Apply to Mr. A. T. Johnson, Personnel Director, Oregon State Board of Health, P. O. Box 231, Portland 7, Ore.

Public health positions in Milwaukee, Wis.

Superintendent of Bureau of Preventable Diseases and Medical Services—$13,800-$16,560. To direct a bureau having diversified services and a 1961 budget appropriation of $846,914. Position involves administration, epidemiology, and research in preventable diseases, including some chronic diseases. Requirements: M.D. degree and certification, or eligibility for certification, by appropriate board in preventive medicine and public health or internal medicine; two years' full-time experience in public health practice, occupational health or equivalent; experience in methodology of research; training in epidemiology or willingness to obtain such training while in the employ of the Milwaukee Health Department; United States citizenship; eligibility for Wisconsin medical license. Employment is possible while awaiting licensure.

Supervisor of Mental Hygiene—$12,600-$15,120. To serve as consultant in child psychiatry to physicians and public health nurses employed by the Milwaukee Health Department and guidance personnel employed by the city of Milwaukee public schools. Clinical examination and diagnosis of limited number of adults referred by the Medical Clinic of the Health Department and children used for case study method of teaching public health physicians and nurses. Requirements: M.D. degree and certification, or eligibility for certification, by American Board of Psychiatry; special interest and training in child psychiatry; United States citizenship; eligibility for Wisconsin medical license. Employment possible while awaiting licensure.

Superintendent of Public Health Laboratories—$11,460-$13,800. To plan and direct the activities of the Bureau of Laboratories having bacteriological, virological, and chemical divisions, in which a total staff of 21 persons are employed. Requirements: M.D. or Ph.D. degree with special training and experience in bacteriology, virology, and chemistry; at least three years' responsible employment in a large hospital or public health laboratory conducting a wide variety of bacteriological, serological, tissue culture, and chemical examinations.

Public Health Engineer II or Public Health Biologist—$7,920-$9,480. To serve as consultant to sanitarians and to plan and conduct special investigations of technical problems. Requirements: master's degree in engineering and two years' experience as public health engineer; or Ph.D. degree in biological sciences with at least two years' employment devoted principally to investigative work.

Nutritionist—$5,808-$6,912. To plan and direct the Health Department's nutrition program, including inservice training of public health physicians and nurses, training of nursing home personnel, and cooperating with home economists employed in the local school system. Requirements: college graduation with major courses in nutrition and one year of graduate study leading to a master's degree in public health nutrition.

All positions are under civil service. All positions provide for paid vacation, paid sick leave, liberal pension plan (incorporated to first $4,800 with federal Social Security system), medical and hospital insurance, and group life insurance. Write to E. R. Krumbiegel, M.D., Commissioner of Health, Milwaukee Health Department, 841 North Broadway, Milwaukee 2, Wis.

Director—for the South Plains Health Department. Headquarters in Brownfield, Tex. Salary $14,000 per annum, plus $2,400 travel expense per annum. Must meet the requirements of the Texas State Department of Health. For more information write Judge Charles Lawrence, Box 847, Seminole, Tex.

Assistant Director, Public Health Nursing—Seeking experienced, creative, PHN to develop and implement training program in a progressive public health setting in beautiful Fresno, cultural center of San Joaquin Valley (134,000 city, 360,000 county population), midway between San Francisco and Los Angeles, near mountains and ocean. Salary $6,384-$7,980. Requires master's degree in nursing administration, supervision, or consultation from a university program approved by the NLN, or an M.P.H. from a university program approved by the APHA, and four years' progressively responsible PHN experience, two in a supervisory capacity. Must have valid California PHN certificate or obtain same during probationary period. Apply by February 1, 1961, to Edward W. Firby, Director of Personnel, Fresno County Civil Service, Room 101, Hall of Records, Fresno, Calif.

Public Health Nurses—Salary range $395-$481 (five-step range). College degree in public health nursing. Experience in public health not necessarily required. PHN certification required to meet State Health Department nursing requirements. Three weeks' vacation per year. Retirement and Social Security benefits. Work 37½ hours per week. Thirty-five miles north of San Francisco. Generalized program. Contact Henry G. Mello, M.D., Solano County Health Officer, 228 Broadway, Vallejo, Calif.

Dietary Consultant—State-wide program in connection with nursing homes. Merit system status, liberal vacation, sick leave, and

group insurance. Excellent working conditions. Salary $4,920-$6,144. Write Director of Personnel, Virginia State Health Department, Richmond, Va.

Mental Health Nurse Consultant—for health department serving county of 360,000, adjacent to Washington, D. C. Progressive, challenging program, located in modern air-conditioned building. Minimum qualifications: master's degree and five years' experience in public health nursing, including some in mental health. Salary $6,580-$8,149, depending on qualifications. Prince George's County Health Department, Cheverly, Md.

Public Health Nurse Superintendent—Responsible for the planning and execution of policies and procedures of a comprehensive public health nursing program. Must possess a degree in nursing from an accredited college, and a master's degree in public health. Annual salary $7,056. Attractive fringe benefits. Apply Room 203, City Hall Annex, Norfolk, Va.

Public Health Nurse III (District Advisory Nurse)—Give guidance and counseling to all public health nurses in a multiple-county area regarding community organization and relationships, program planning, public health nursing technics, records, and reporting. Responsible for inservice education program for local public health nurses and evaluation of nursing services. Salary range $5,700-$6,780, plus travel allowance. B.S. degree with major in public health nursing and three years' generalized experience as a public health nurse. Special requirement: registration or eligibility therefor as a registered nurse in Wisconsin; certification or eligibility for certification as a public health nurse in Wisconsin. Write Miss Ione M. Rowley, Director, Public Health Nursing, 119 Monona Ave., Madison 3, Wis.

Administrative Assistant—This is an exceptionally fine opportunity for a man in a new and rapidly expanding operation. An interest in international affairs with special reference to health problems is a requisite here. College degree and language facility very helpful. This position will entail liaison and research work with world health and medical associations of all types relating our work in the health field to international groups. Send résumé stating salary desired. All held confidential. Don Grant, Employment Manager, American Medical Association, 535 North Dearborn St., Chicago 10, Ill.

Biostatistician—interested in field studies. Experience with coding for IBM machines, preferably some code building; at least two years of statistics courses, including significance tests; mathematical aptitude. Knowledge of some IBM machines; experience with tables, designs, computations. School of public health in the East. **Box ST-23,** Employment Service, APHA.

Public Health Statistician—Opening for head of Bureau of Vital Statistics of the City of St. Louis. Prefer person with a master's degree in biostatistics. Please write for further information. Department of Personnel, 235 Municipal Courts Bldg., 1320 Market St., St. Louis 3, Mo.

Research Associate in Health Economics Field—Unusually fine opportunity now available for a man with a background in the socioeconomics of medical care involving the employed population. Conduct research and develop material on nonoccupational medical problems of industrial workers. A knowledge of labor and management problems helpful. Familiarity with professional and community medical associations desirable. Some travel involved. Please send résumé stating salary desired. All held confidential. Don Grant, Employment Manager, American Medical Association, 535 North Dearborn St., Chicago 10, Ill.

Health Education Project Coordinator (Male)—Excellent opening. Salary $560 per month; $6,720 per year; periodic salary increases. Tri-County District Health Department (250,000 population), suburban Denver, Colo. Vacancy for chief of health education section. Master's degree in public health education or equivalent required; at least one year's experience in community health or public health programs; abilities in planning, community organization, and public speaking. Top references required. Excellent benefits, vacation, sick leave, Social Security, modern health facilities. For details write William S. Haynes, M.D., 1451 Kenton, Aurora, Colo.

Health Educator—Opportunity in sunny Miami with the Dade County Health Department. Requirements are a master's degree and three years' experience. Salary $5,040-$6,300; liberal fringe benefits. Apply: Miles T. Dean, Personnel Officer, State Board of Health, P. O. Box 210, Jacksonville 1, Fla.

Public Health Educator III (Chronic Disease)—Initiate and develop community interest and cooperation in the organization of state-sponsored local programs for rehabilitation of the aged. Assist in development of rehabilitation training institutes on state and local levels. Prepare audiovisual materials relating to aging and rehabilitation. Will be responsible for development of reference and information library. Desirable qualifications: M.P.H. or master's degree in education or related field, plus two years' experience, preferably related to position. Salary starts at $6,060; maximum $7,200. Travel allowance, vacation, sick leave, retirement, group insurance plans. Write R. J. Siesen, Personnel Officer, State Board of Health, Madison 2, Wis.

SANITARY ENGINEER

San Francisco Bay Area

Excellent opportunity for graduate engineer with at least three years' experience in position involving planning, field investigations, design, inspection, and operation of water supply and treatment systems—sewage and industrial waste treatment and disposal facilities—industrial water conditioning systems. Limited travel and varied work. Federal Civil Service (Navy) with annual salary from $7,560 to $8,860.

Write or call:
Director, Civilian Personnel Division
District Public Works Office, Twelfth Naval District, San Bruno, Calif.

JUno 3-1640, ext. 241 or 243

Air Pollution Engineer—Vacancy with the state of Hawaii Department of Health, Bureau of Industrial Hygiene. Requires one year of work experience in the design, construction, or alteration of fuel-burning equipment and a bachelor's degree in mechanical, chemical, sanitary, or civil engineering. Appointments to this position may be made at any step between $6,792-$8,664 per annum. For further information and application, write to the Department of Personnel Services, State of Hawaii, 825 Mililani St., Honolulu 13, Hawaii.

Chief Industrial Hygiene Engineer—Minimum of five years' experience in public health engineering. Master's degree with major course work in industrial hygiene or sanitary engineering. Present salary range $625-$775; civil service proposed salary to become effective July 1, 1961, $715-$880. Social Security and state retirement coverage. Write to Mr. A. T. Johnson, Personnel Director, Oregon State Board of Health, P. O. Box 231, Portland, Ore.

Public Health Sanitarian—Eligible for registration. Beautiful mountainous area; good schools and junior college. Abundant recreational opportunities. Salary range $400-$455 per month. Write Arthur L. Warner, M.D., M.P.H., Director, San Juan Basin Health Unit, P. O. Box 140, Durango, Colo.

Director of Central Laboratory Services—to fill a new position heading the several functional sections of the public health laboratory system in Atlanta with professional and administrative guidance from the director of the system. One year of graduate study and six years' technical and administrative experience desired. Entrance salary $8,088 with advances to $11,580. Forty-hour week. Unusually good retirement system. Write H. M. Chester, Director of Personnel Services, Georgia Department of Public Health, 47 Trinity Ave., Atlanta 3, Ga.

Microbiologist—Salary range $6,000-$7,000. College degree in bacteriology or microbiology. Advanced degree or experience in water pollution desirable. For information and interview contact C. H. J. Hull, Department of Sanitary Engineering, The Johns Hopkins University, Baltimore 18, Md.

Bacteriologist—for State Health Laboratory, Helena. B.S. degree with 20 semester hours of bacteriology required. Salary $380-$480. Above minimum appointment can be made for previous experience. Contact Administrative Officer, State Board of Health, Helena, Mont.

Bacteriologist—for the Vermont State Department of Health. Requires bachelor's degree with major in bacteriology and one year of laboratory experience in bacteriology or related work. Salary starts at $436.15 per month. Write to R. W. Prior, Personnel Officer, 115 Colchester Ave., Burlington, Vt.

Bacteriologist—Opening in the Public Health Laboratory of the City of St. Louis. Pay range is $5,570-$6,770 per year. Master's degree in bacteriology required. Department of Personnel, 235 Municipal Courts Bldg., 1320 Market St., St. Louis 3, Mo.

Medical Social Workers—New 210-bed tuberculosis hospital in Chicago suburban area. Full maintenance if desired. Opportunity for casework services in hospital or outpatient clinics. Travel allowance for latter. Excellent personnel policies and employee benefits. M.S.W. required. Salary open. W. R. Williams, Administrator, Suburban Cook County Tuberculosis Sanitarium District, 55th and County Line Rd., Hinsdale, Ill.

Dental Hygienist Trainee—Inservice training program available for a qualified dental hygienist with a bachelor's degree. After supervised field experience the trainee will be considered for educational leave and scholarship to complete graduate training. Salary starts at $5,100-$5,700 per year depending upon experience. Civil service, vacation, sick leave, Social Security, and retirement benefits. Write R. J. Siesen, Personnel Officer, State Board of Health, 400 State Office Bldg., Madison 2, Wis.

Dental Hygienist—for dental health education program in Fargo and eastern North Dakota. Under supervision of State Health Department. Advanced training desirable but not required. Salary open and dependent on applicant's training and experience. For additional information write Dental Division, North Dakota State Department of Health, Bismarck, N. D.

Physical Therapist Consultant—Statewide program in connection with nursing homes. Merit system status, liberal vacation, sick leave, and group insurance. Excellent working conditions. Salary $4,920-$6,144. Write Director of Personnel, Virginia Health Department, Richmond, Va.

Institution Medical Services Director—Position with the Hawaii Department of Health. Responsible for the medical, dental, laboratory, and nursing care services in an institution for the mentally retarded. Requires eligibility for certification by the American Board of Pediatrics, Internal Medicine, or Psychiatry and Neurology, and eligibility for a medical license in Hawaii. Salary $10,032-$12,804 per annum. Write to Recruiting and Examining Division, Department of Personnel Services, 825 Mililani St., Honolulu 13, Hawaii.

Crippled Children's Physician—Position with Hawaii Department of Health. To administer program for the prevention of children's disease and deformity and to direct medical care program for crippled children. Requires one year of experience in a public health agency or one year of public health graduate study, and eligibility for certification by the American Board of Pediatrics, Orthopedics, Neurology, or Plastic Surgery, and license to practice medicine in Hawaii. Salary $11,064-$14,112 per annum. Write to Recruiting and Examining Division, Department of Personnel Services, 825 Mililani St., Honolulu 13, Hawaii.

Commissioner of Public Health—for the city of Worcester, Mass., population 200,000. Minimum requirements: citizenship, M.D. from Grade A medical school, public health degree, practical public health experience. Well organized staff, 75 full time, 50 part time. Ideal living conditions. Maximum salary at present $15,000. Available February 1st. Apply, outlining qualifications and background and salary desired, to Francis J. McGrath, City Manager, City Hall, Worcester 8, Mass.

District Health Officer—Public health administrator of a district area; district epidemiologist. Plan, organize, supervise work of professional staff consisting of engineers, nurses, sanitarians, nutritionists, dental hygienists, health educators, and social workers. Requires M.D. and M.P.H. degrees and license to practice medicine in Wisconsin. Salary $15,072-$16,872 per year with two years of approved residency in preventive medicine beyond M.P.H. degree. Civil service, vacation, sick leave, Social Security, retirement, group health and life insurance benefits, travel allowance. For applications and further information write R. J. Siesen, Personnel Officer, State Board of Health, State Office Bldg., Madison 2, Wis.

District Health Officer—Public health administrator of a district area; district epidemiologist. Plan, organize, supervise work of professional staff consisting of engineers, nurses, sanitarians, nutritionists, dental hygienists, health educators, and social workers. Requires M.D. and M.P.H. degrees and license to practice medicine in Wisconsin. Salary $12,072-$15,072 per year with no residency training beyond M.P.H. degree. Civil service, vacation, sick leave, Social Security, retirement, group health and life insurance benefits, travel allowance. For applications and further information write R. J. Siesen, Personnel Officer, State Board of Health, State Office Bldg., Madison 2, Wis.

Director, Public Health Education—to plan and carry out education programs on a county-wide basis in a well established County Health Department. Liberal vacation and sick leave, hospitalization plan, retirement benefits. Salary $7,407-$9,011 per annum. Please contact William J. Meyer, M.D., Director, Bucks County Department of Health, 50 N. Main St., Doylestown, Pa.

Director of Laboratory—serving a 1,000 bed tuberculosis hospital through 12 technical and six nontechnical workers. Located in progressive city of good churches and schools, two colleges. One year of graduate study. A.S.C.P. registration and five years' experience in clinical laboratory desired. Entrance salary $6,060 with advances to $8,724. Forty-hour week; compensation for emergency duty; unusually good retirement system. Write H. M. Chester, Director of Personnel Services, Georgia Department of Public Health, 47 Trinity Ave., Atlanta 3, Ga.

Chief Assistant Public Health Officer—Assists in the administration of a modern health program and facility serving a community of approximately 300,000 in Kern County, Calif. Requires California M.D. license or eligibility, M.P.H., and total of five years' experience in medicine with three years of recent experience in public health. Desirable professional climate with excellent employee benefits. Salary $12,528-$15,228 per annum. Starting level commensurate with qualifications. Contact Kern County Personnel Department, Civic Center, Truxtun at Chester, Bakersfield, Calif.

POSITIONS WANTED

On Box Numbers, Address APHA at 1790 Broadway, New York 19, N. Y.

Public Health Physician—Experienced in academic and public health practice. Graduate in arts, medicine, and child health. Presently medical director, international welfare organization, Iran. Previously, associate professor, preventive medicine. Desires position in academic or public health field. Curriculum vitae on file. Available in the United States for interviews mid-February to early March. **Box PH-12,** Employment Service, APHA.

Research Coordinator-Social Scientist—Experienced in general medical and psychiatric settings of nation-wide research programs, including administrative operations and experimental design. Desire post in urban community with prospect of some permanence. Numerous publications. Presently employed, available summer, 1961. **Box M-27,** Employment Service, APHA.

Commercial Advertisements

All communications on the following commercial advertisements should be sent to Burneice Larson, Medical Bureau, Suite 605, 900 North Michigan Avenue, Chicago 11, Ill.

OPPORTUNITIES AVAILABLE

(a) M.D., director national health organization; large medical, public health, social worker staff; Midwest. (b) Medical director for Atlantic Coast Blood Center; public health experience desirable; top salary for qualified person; present incumbent retiring. (c) Health officer, ability to plan and execute administrative policies; thorough knowledge of state, federal public health laws; effective public speaker; ideal West Coast location. (d) Public health chemist, analytical, supervisory laboratory experience, Great Lakes University center; $8,000-$10,000. (e) Virologist or microbiologist, interest virus diseases; opportunity research, teaching; southern university; $8,000-$10,000. (f) Ph.D., sanitary chemist, head state department of environmental health; teach university medical students; beautiful lake campus; $8,000-$10,000; Midwest. (g) Public health nurse to direct comprehensive public health nurse program, seacoast city; large southern U. S. Naval Base; $7,200. (h) Public health nurse director, county health department, California ocean city near mountain resorts; $7,200 plus.

SITUATIONS WANTED

(1) Medical director, 15 years' experience renowned industrial organizations, U. S. and overseas; M.D., D.P.H.; M.S. in administrative medicine, Columbia U. (2) Laboratory director, Ph.D., bacteriology; six years as laboratories chief, large health department; also hospital consultant. (3) Nurse administrator, B.S., M.P.H., public health, Columbia University, five years in city-county health department; seven years as director of community health center.

BOOK REVIEWS

All reviews are prepared on invitation. Unsolicited reviews cannot be accepted.

CHRONIC DISEASE AND REHABLITATION: A Program Guide for State and Local Health Agencies—New York, N. Y.: American Public Health Association (1790 Broadway), 1960. 116 pp. Price, $2.50.

In my opinion, health workers will find it worthwhile to own a copy of this Program Guide for State and Local Health Agencies. Here, in one package of 115 pages, may be found a review of many of the past and current programs for chronic disease. The American Public Health Association has worked at the task for a period of forty years, jointly with the American Public Welfare Association, the Hospital Association, and the Medical Association, and later as a member of the National Commission on Chronic Illness.

After the National Commission on Chronic Illness dissolved in 1956 and returned the responsibility of carrying on the work to its respective member agencies, the APHA appointed a Committee on Chronic Disease and Rehabilitation. One of the major activities of this committee from 1957 to 1960 was the preparation of the Program Guide for Chronic Disease and Rehabilitation under the able chairmanship of Dr. Lester Breslow.

Part II of the volume under review presents the current practices in chronic disease control in communities and in states. Suggestions are given for greater use of the health department personnel by the other agencies, such as welfare departments and vocational rehabilitation services. Modern concepts of health are explored, and the contributions made by other than professional health workers to improve physical and emotional health are indicated. The experience gained from maternal and child health services over the past forty years should prove useful in developing more services for adults.

Part III examines preventive measures which may be used for primary and secondary prevention in averting disease and halting its progress. The epidemiological approach to chronic illness is advocated and some interesting examples of how this is being done are given. Great emphasis is placed on the importance of more epidemiological research in the relationship of illness to diet, work environment, and other aspects of living.

Part IV deals with direct and indirect services to patients as a means of limiting disability and restoring function. The success of the federal-state crippled children's services is cited as an example of how similar services might be provided for adults. The contributions of clinics, of institutions, of home care programs to the prevention and control of chronic disease are explored. The local and state health departments' responsibility for giving leadership in establishing such community services as well as in providing direct services is again emphasized. It is pointed out that not only does the health department have a responsibility for giving direct services, but it also has a responsibility for indirect services, such as providing a method for coordinating the many community services, helping with planning the construction of buildings for various types of facilities, and for the licensure and supervision of these facilities; also for providing consultation to hospitals, nursing homes, and other health agencies, and for professional education.

Part V gives the feasible goals that any health department, large or small, can set for itself. Any health depart-

ment can include services for adults in its program and provide the community leadership required to establish other services needed for chronic disease control. An important observation is that, as preventive services increase, there will be proportionately less need for rehabilitation services.

In my view, the Program Guide should be equally helpful to nonmedical persons who are members of state and local health planning committees. Few laymen, and indeed not all health professionals, are aware of the variety of direct and indirect services that can be utilized by public and voluntary agencies in the long fight against chronic disease. EMILIE G. SARGENT

HANDBUCH DER BERUFSKRANKHEITEN 2., NEU BEARBEITETE AUFLAGE—(German publication: Handbook on Occupational Diseases.)—By Franz Koelsch. Jena, Germany: Veb Gustav Fischer Verlag, or New York, N. Y.: Stechert-Hafner (31 E. 10th St.), 1959. 1134 pp. Price, DM. 76 or $7.50.

The first edition of this book was published in two volumes in the years 1935 and 1937. The present edition is greatly enlarged and far more complete. It has been edited by Dr. Koelsch and written by him and other experts, who have contributed special sections.

In contrast with many American contributions, which emphasize the industrial and industrial hygiene aspects of the occupational diseases, the present volume places more emphasis on their clinical aspects. In the opinion of the reviewer, this adds substantially to its value, for clinical material on the occupational diseases frequently is not readily at hand.

The volume is very well balanced and presents detailed information on the incidence of accidents and industrial diseases, including such subjects as electrical accidents, burns and cold, changes in atmospheric pressure, noise and radiation, and the usual material concerning health hazards associated with each of the major industries.

One of the most important sections of the volume is that dealing with the effects of industrial exposures and the occupational diseases on the organ systems of the body. In this section, there is presented much valuable and detailed information which the practicing physician and specialist will find of substantial value in elucidating the etiology of the occupational disease.

The section on new growths also deserves special mention, for here one finds an excellent presentation of this subject which has been sorely needed up to this time.

The bibliography provides a listing of volumes in addition to current periodical literature in a complete and well classified manner.

This is the most up-to-date single volume covering the whole field of the occupational diseases available today and, without doubt, should be useful to the practicing physician as well as to the specialist in occupational diseases.

LEONARD GREENBURG

RECENT ADVANCES IN PUBLIC HEALTH (2nd ed.)—By J. L. Burn. Boston, Mass.: Little, Brown, 1959. 370 pp. with 54 illustrations. Price, $10.00.

This is the American printing of a book published in England by the medical officer of health of the City of Salford. The purpose and scope of the book are somewhat more circumscribed than its title would indicate. It is, as the author states in his preface an "endeavour . . . to provide . . . an account of some of the advances made in the practical day-to-day working of public health services at local level" in Great Britain, and the author assumes that the reader is familiar with the general administrative pattern of health services under the British National Health Services Act of 1946.

American public health workers will be particularly impressed with two things. One is the very great emphasis placed on direct service to individuals and families. The other is the inclusion, within the purview of public health, of many problems and programs which, although health-related, we are likely to regard as more within the realm of public welfare. Examples are juvenile delinquency, domestic relations counseling, the planning of playgrounds, and problems of eviction. Perhaps some public health administrators in this country will be surprised at the author's conclusion that "there seems little doubt that the amalgamation of the health and welfare services, under the direction of the medical officer of health, has many advantages" (p. 240).

The text is enlivened by occasional touches of humor, for example, the observation made by a food handler, upon his first encounter with a hot-air hand-drying machine, that it was a very good machine but that it did not remove the dirt as well as a towel.

This volume is directed primarily to a British audience. American readers will find it of interest as a description of the British approach to local public health services.

ROBERT E. COKER, JR.

COMMUNICABLE AND INFECTIOUS DISEASES (4th ed.)—By Franklin H. Top, et al. St. Louis, Mo.: Mosby (3207 Washington Blvd.), 1960. 812 pp. Price, $20.00.

The stated intent still is to present a "handy reference for all persons whose professional duties necessitate contact with . . . communicable disease. . . ." This intent is fulfilled admirably, on the whole. The arrangement of the contents and chapter outlines is convenient, the index is extensive, typography and layout are clear, illustrations excellent and plentiful. The chapter bibliographies are important. For public health workers, this book presents a practical extension of the skeleton-type information provided in the APHA's Ninth Edition (1960) of the booklet "Control of Communicable Diseases in Man." Top's text provides more information than standard texts on medical practice but is more concise than other major works on bacterial and viral infections of man. Even considering its high cost, it should be a part of the working library of all concerned health agencies.

The extensive reorganization and revision of this fourth edition merit favorable comment. The interpretation of developments in antibiotic and chemotherapeutic agents is much clearer, and discussion of the management of communicable disease in home and hospital is clarified and simplified without loss of "working" flavor. The new chapters on Acute Respiratory Infections, Enteroviruses and Staphylococcal Infections are particularly welcome.

There are some problems of uneven revision and organization. For instance, "Infectious Encephalitis" is still placed on the basis of a common portal of entry under "The Respiratory Tract," even though the discussion is largely of arthropod-borne disease. The text on encephalitis and its bibliography need updating. The chapter on "Specific Prevention of Communicable Diseases" contains no discussion of BCG, and the chapter on tuberculosis deals superficially with this important and controversial topic. Finally, it does seem unnecessary to find so many ordinary English words (arid, banal, convalescence, inanimate, etc.) in a Glossary presumably provided to define technical terms.

ARTHUR C. HOLLISTER

ATOMIC RADIATION, PART II—Prepared by R.C.A. Service Company, Inc., Camden 8, N. J., 1960. 117 pp. Price, $2.65.

This illustrated book is primarily written for supervisory personnel at major atomic installations who are not

health physicists. The easily understandable language makes it readable also for the health officer, sanitary engineer, or sanitarian who may rather suddenly encounter the problems accompanying the issuance of a reactor construction permit by the Atomic Energy Commission.

The six chapters—Radiation Detection and Measurement, Radiation Exposure Control, Permissible Levels of Radiation, Radiation Exposure Incidents, Radioactive Material Transport, and Radioactive Waste Disposal—are a mixture of operating procedures for reactor personnel and basic concepts in radiological health.

The booklet will give a detailed insight into the health problems connected with reactor operation, radiation exposure control, laundering of contaminated clothing, shipment of isotopes, and waste disposal. It deals rather extensively with the regulations of the Atomic Energy Commission but tells the reader nothing of the laws and regulations which have been adopted so far by 28 states.

The book, which states in the introduction that it has been prepared for as wide an audience as possible, is misleading with its broad title, "Radiation Protection." The title should read "Radiation Protection at a Major Nuclear Installation." About 65 per cent of the material, while very interesting, will be of little immediate value for the average holder of an isotope license or the user of x-ray machines.

JAN LIEBEN

ENSURING MEDICAL CARE FOR THE AGED—By Mortimer Spiegelman. Homewood, Ill.: Richard D. Irwin, Inc. Pension Research Council Publication, 1960. 280 pp. Price, $5.75.

Public health workers interested in the problem of financing medical care for the aged can find in this volume a great fund of pertinent statistical data compiled from many sources and interpreted with remarkable care. The factual material presented in six chapters pictures our present knowledge of the demographic, social, and economic characteristics of the aged, their health status and health attitudes, their utilization of personal health services and medical care expenditures, and the existing mechanisms for financing the medical care of senior citizens. Particularly valuable are the author's critical comments on shortcomings in statistical methodology and pitfalls in determining the meaning of data. The closing chapter outlines the prerequisites for attaining the goal, summarizes the attitudes of important organizations, and states the author's own opinions about future policy. Except for the last chapter, the analysis of the situation is distinguished by breadth and depth.

FRANZ GOLDMANN

FLUORINE AND DENTAL HEALTH—Edited by Joseph C. Muhler and Maynard K. Hine. Bloomington, Ind.: Indiana University Press, 1959. 216 pp. Price, $5.00.

Where do we find fluorides? Where do they go once they enter the body? What effect do they have upon body tissues and body systems? Do we store fluorides or do we excrete them? Are they beneficial to us or are they a hazard? These are the questions which this book will answer.

It will prove an excellent source of reference when questions arise concerning the safety of communal fluoridation, for the book is a collection of authoritative papers on fluorides which were read at the 1958 Indianapolis meeting of the American Association for the Advancement of Science. The chapters have been written by individuals who have themselves investigated the effects of the fluorides on human beings and on animals.

Nutritionists will be interested in the discussion concerning the existence of

fluorine in foods and in certain compounds used by various branches of medicine, as well as in the review of studies conducted to determine whether or not fluorine should be considered a dietary essential.

This reviewer was particularly interested in the excellent discussion of the legal aspects of fluoridation presented by Bernard J. Conway, a lawyer, who points out the contribution which fluoridation litigation has made to political science and legal learning.

Adding to the value of this publication are the references at the end of each chapter, Doctor Muhler's summarization, and the detailed index.

"Fluorine and Dental Health" provides overwhelming evidence in support of the safety of communal water fluoridation. POLLY AYERS

HEALTH PLANS AND COLLECTIVE BARGAINING—By Joseph W. Garbarino. Berkeley, Calif.: University of California Press, 1960. 301 pp. Price, $5.00.

Professor Garbarino's new book constitutes a very valuable contribution to understanding the important place of collective bargaining in the development of voluntary health insurance plans in the United States today. Here, in very readable form, is an excellent presentation of the realities rather than the theories that underlie labor's problems with health insurance. Clearer than any recent publication in this field, this book shows the broad political nature of the activities attending the development of new forms of medical insurance and new kinds of health care organization. Set forth with especial clarity are the activities of organized medicine at the local level in relation to the attempts of employers, employees and community leaders to solve the problems of voluntary health insurance.

To warn that its generalizations apply only to the California Bay area is not to downgrade the contribution this book makes. By such case histories of a region the extreme complexity of health care planning and negotiation is made clear. Professor Garbarino probes deeply into the problems of bargaining and health plan organization and has vividly set forth the real problems that exist. There are certain national problems on which he wisely does not attempt to generalize.

I have some quarrel with a few of the predictions in his very interesting closing chapter, "A Summing Up." But to the serious student of voluntary health insurance this delineation of the pragmatic way in which problems are tackled is well worth reading. This is one of the most sophisticated and valuable books in its field yet published. It is hoped that the author will continue his lucid exposition of problems and solutions of collective bargaining for health programs. JAMES BRINDLE

INTERPROFESSIONAL TRAINING GOALS FOR TECHNICAL ASSISTANCE PERSONNEL ABROAD—Prepared by Irwin T. Sanders. New York, N. Y.: Council on Social Work Education (345 E. 46th St.), 1959. 198 pp. Price, $3.00.

Here is a practical book for those who are interested or engaged in technical assistance work in the "developing countries" throughout the world. But there are others who would want to read it. Among them are the public health workers, social scientists, teachers, and students who want to learn what a conference reported about the professional person as an agent of change, the analysis of social change, and the training of professionals as change-agents abroad.

The book is a report of an interprofessional conference on training of personnel for overseas service held in June, 1959, and it contains interesting papers on social change as well as an interpretation of the main ideas that were taken

up. This report is not presented as conference proceedings; it makes its contribution through an easy-to-follow format and its functional suggestions. For example, in the part dealing with training professionals as change-agents abroad, answers are given to such questions as: Who is to be trained? When is training to be given? What should the training program include? How is the program to be conducted? Where should training occur?

In the conclusion, there is reference to "some of the philosophical tongue-twisters tossed out to the group . . . the confrontation of the political realities of our time, and the dilemma of professionals faced with conflicting claims upon their loyalty."

The story of the conference brings out, among other components, the interrelatedness of programs in health, education, agriculture, social welfare and public administration. Workers in those fields, particularly, should find this volume valuable.

MOREY R. FIELDS

THE HEINZ HANDBOOK OF NUTRITION— Edited by Benjamin T. Burton, executive editor; Floyd S. Daft; Grace A. Goldsmith; Helen A. Hunscher; C. Glen King; W. Henry Sebrell, Jr.; and Fredrick J. Stare. New York, N. Y.: Blakiston Division, McGraw-Hill (330 W. 42nd St.), 1959. 439 pp. Price, $5.75.

The subtitle of this volume is "A Comprehensive Treatise on Nutrition in Health and Disease." Comprehensive it is in the extent or kind of subject matter covered. The stated purpose of the handbook is to be "a more comprehensive work on the principles of nutrition as applied to dietary practices and institutional dietetics, as well as on the role of nutrition in preventive and therapeutic medicine — a reference manual with supporting data which would be both reliable and useful. Such a definitive treatise would attempt to condense and encompass the entire field of human nutrition, both in health and disease, in a concise and authoritative manner. It is hoped that this Handbook will be not only a practical addition to the armamentarium of the practicing physician, dietitian and nutritionist, but that it may become a reference book and teaching aid for teachers and students of nutrition, medicine, nursing, home economics, and food technology."

The subject matter of the book is divided into five parts. "The first part deals with the basic physiology and biochemistry of the human body as it relates to food intake and utilization. The second part presents the various nutrients, their sources, metabolism, physiology and interrelationships. The third part encompasses human nutritional requirements and nutrition under varying conditions of health and in periods of physiologic stress. The fourth part is devoted to nutrition in disease—the relationship between nutrition and specific diseases and the practical therapeutic and preventative aspects of special diets. The fifth part presents miscellaneous, but essential, aspects of nutrition not directly related to the first four divisions." An appendix includes tables of food composition. According to the Introduction, a determined effort has been made to have the material presented represent the "mainstream of accepted contemporary scientific and clinical opinion." Specific references are not cited, "since it was felt that the object of this Handbook is to present concise, up-to-date and accepted information—not to serve as a key to existing voluminous literature."

In many ways the book fulfills its purpose admirably. In few volumes could one find such a wide coverage of the whole field of food and nutrition in health and disease. For the practical person wanting the elements in a straightforward, dogmatic, predigested,

extremely condensed form, here it may be found between the covers of one volume. However, to the serious student or teacher of either nutrition or medicine, these same attributes are limitations. CHARLOTTE M. YOUNG

HEALTH PHYSICS INSTRUMENTATION. Volume I. International Series of Monographs on Nuclear Energy—By J. S. Handloser. New York, N. Y.: Pergamon Press (122 E. 55th St.), 1959. 182 pp. Price, $6.50.

"Health Physics Instrumentation" is a concise description of many of the instruments used in health physics or radiological health work. It is aimed at the beginner in health physics who has little or no training and experience with radiation-measuring devices, although many items in the book require additional clarification for complete understanding. The treatment of most of the topics is quite brief and in the nature of a general survey—hence this is not a book for the professional health physicist and such people will not find it stimulating reading.

Topics covered range from a discussion of the types of radiation and radiation units, through various types of radiation detectors, portable survey instruments, fixed radiation monitors, counting rooms and equipment, calibration technics, and finally a discussion of specialized equipment such as pulse-height analyzers. The chapter on neutron monitors is especially good and has its own rather complete bibliography.

This book by itself does not lead to a working knowledge of radiation instrumentation, but it is perhaps a good introduction for those people who are just entering the field of radiological health.

R. J. AUGUSTINE

AN INVENTORY OF SOCIAL AND ECONOMIC RESEARCH IN HEALTH (8th ed.)—New York, N. Y.: Health Information Foundation (420 Lexington Ave.), 1959. 556 pp. Free.

The size of this inventory grows with the passing years and its publishers inform us that its distribution grows even more rapidly. The spectrum of subjects listed is great. The potential user may be puzzled by the classification of projects, since many do not fall clearly within the three groupings of the inventory. It is therefore recommended that the researcher ignore the table of contents and resort to the excellent subject index in pursuing his interest.

THOMAS R. HOOD

BOOKS RECEIVED

Listing in this column acknowledges the receipt of books and our appreciation to the senders. Space and the interests of readers will permit review of some, but not all, of the books listed.

ALCOHOLIC PSYCHOSES, THE. Demographic Aspects at Midcentury in New York State. Benjamin Malzberg. New Haven, Conn.: Yale Center of Alcohol Studies, 1960. 46 pp. Price, $2.00.

ATLAS OF MEDICAL MYCOLOGY (2nd ed.). Emma Sadler Moss and Albert Louis McQuown. Baltimore, Md.: Williams & Wilkins, 1960. 335 pp. Price, $11.00.

BASIC PSYCHIATRIC CONCEPTS IN NURSING. Charles K. Hofling and Madeleine M. Leininger. Philadelphia, Pa.: Lippincott, 1960. 540 pp. Price, $6.25.

CED DETELLE FIGHTS CRIME. Richard Bellmont. New York, N. Y.: Exposition Press, 1960. 158 pp. Price, $3.50.

CENTRAL NERVOUS SYSTEM AND BEHAVIOR, THE. Transactions of the Third Confer-

ence, February 21-24, 1960. Mary A. B. Brazier. New York, N. Y.: Josiah Macy, Jr. Foundation, 1960. 475 pp. Price, $7.50.

CLINICAL STUDIES IN NUTRITION. Eleanora Sense. Philadelphia, Pa.: Lippincott, 1960. 249 pp. Price, $4.00.

COMPARATIVE EFFECTS OF RADIATION. Report of a Conference held in San Juan, University of Puerto Rico, 1960, Sponsored by National Academy of Sciences—National Research Council. Edited by Milton Burton; J. S. Kirby-Smith; and John L. Magee. New York, N. Y.: Wiley, 1960. 426 pp. Price, $8.50.

CONGENITAL MALFORMATIONS OF THE HEART (Vol. 1). Helen B. Taussig. Cambridge, Mass.: Harvard University Press, 1960. 204 pp. Price, $4.75.

CONTROL OF MALNUTRIRION IN MAN. A Manual prepared by the Subcommittee on Control of Nutritional Diseases of the American Public Health Association. New York, N. Y.: American Public Health Association, 1960. 140 pp. Price, $1.50.

DIRECTORY OF SOCIAL AND HEALTH AGENCIES OF NEW YORK CITY 1960-1961. Prepared under the Direction of the Committee on Information Services of the Community Council of Greater New York, Inc. New York, N. Y.: Columbia University Press, 1960. 689 pp. Price, $8.50.

DISASTER NURSING. Frances Crouch Nabbe. Paterson, N. J.: Littlefield, Adams, 1960. 74 pp. Price, $1.25.

DISCUSSIONS ON CHILD DEVELOPMENT (Vol. 4). The Fourth Meeting of WHO Study Group on the Psychobiological Development of the Child, Geneva, 1956. Edited by J. M. Tanner and B. Inhelder. New York, N. Y.: International University Press, 1960. 186 pp. Price, $5.00.

DISEASE CONCEPT OF ALCOHOLISM, THE. E. M. Jellinek. Published on behalf of the Christopher D. Smithers Foundation, New York City, and distributed by Publications Division, Yale Center of Alcohol Studies, New Haven, Conn. New Haven, Conn.: Hillhouse Press, 1960. 246 pp. Price, $6.00.

EARLY IDENTIFICATION OF EMOTIONALLY HANDICAPPED CHILDREN IN SCHOOL. Eli M. Bower. Springfield, Ill.: Thomas, 1960. 120 pp. Price, $5.50.

EDUCATION FOR NURSING. A History of the University of Minnesota School. James Gray. Minneapolis, Minn.: University of Minnesota Press, 1960. 239 pp. Price, $5.00.

EVOLVING LIBERAL ARTS CURRICULUM: A HISTORICAL REVIEW OF BASIC THEMES. Willis Rudy. A publication of the Institute of Higher Education. New York, N. Y.: Columbia University Teachers College Bureau of Publications, 1960. 135 pp. Price, $3.00.

EXPLORING THE WAYS OF MANKIND. Walter Goldschmidt. New York, N. Y.: Holt, Rinehart, and Winston, 1960. 592 pp. Price, $4.75.

FUNDAMENTALS AND POSSIBILITIES IN ANTI-TUBERCULOSIS VACCINATION. Richard Prigge and Gunther Heymann. Toronto, Canada: University of Toronto Press, 1960. 180 pp. Price, $5.00.

GENETICS—GENETIC INFORMATION AND THE CONTROL OF PROTEIN STRUCTURE AND FUNCTION. Transactions of the First Conference, October 19-22, 1959. Edited by H. Eldon Sutton. New York, N. Y.: Josiah Macy, Jr. Foundation, 1960. 229 pp. Price, $6.00.

GESUNDHEITSWESEN DER TSCHECHOSLOWAKEI (Public Health System of Czechoslovakia). R. Urban. Marbur/Lahn, Czechoslovakia: Johann Gottfried Herder-Institut, 1959. 197 pp. Price, DM 12.—.

IN THE INTEREST OF A CHILD. Compiled by Dorothy Campbell Tompkins for the California Special Study Commission on Juvenile Justice and the California State Board of Corrections, 1959. Berkeley, Calif.: University of California, Bureau of Public Administration, 1959. 251 pp.

INFECTIOUS DISEASES OF CHILDREN (2nd ed.). Saul Krugman and Robert Ward. St. Louis, Mo.: Mosby, 1960. 398 pp. Price, $13.00.

ILLNESS AND HEALTH CARE IN CANADA. Canadian Sickness Survey, 1950-1951. Ottawa, Canada: Department of National Health and Welfare, 1960. 217 pp. Price, $2.00.

LABORATORY MANUAL OF MEDICAL MICROBIOLOGY. Janet B. Gunnison. Palo Alto, Calif.: N-P Publications, 1960. 243 pp. Price, $3.50.

MANUAL DE ODONTOLOGIA SANITARIA. Volume 1—TEORIA DA ODONTOLOGIA SANITARIA. Mario M. Chaves. Sao Paulo, Brazil: Sao Paulo University, 1960. 391 pp.

MEDICAL AND DENTAL ASPECTS OF FLUORIDATION. W. A. Cannell. London, England: H. K. Lewis & Co., Ltd., 1960. 125 pp. Price, 15 s. net.

METHODS OF ANALYSIS A.O.A.C. (9th ed.). Washington, D. C.: Association of Official Agricultural Chemists, 1960. 832 pp. Price, $17.50; Foreign, $18.00.

NURSES CAN GIVE AND TEACH REHABILITATION. Mildred J. Allgire and Ruth R. Denney. New York, N. Y.: Springer, 1960. 61 pp. Price, $1.25.

OCCUPATIONAL DISEASES AND INDUSTRIAL MEDICINE. Rutherford T. Johnstone and Seward E. Miller. Philadelphia, Pa.: Saunders, 1960. 482 pp. Price, $12.00.

PSYCHOANALYTIC STUDY OF THE CHILD, THE (Vol. 15). Edited by Ruth S. Eissler, et al. New York, N. Y.: International Universities Press, 1960. 481 pp. Price, $8.50.

RESEARCH AS A SCIENCE—ZETETICS. Joseph T. Tykociner. Urbana, Ill.: Joseph T. Tykociner, 1959. 205 pp. Price, $2.00.

SCIENCE—THE ENDLESS FRONTIER. Vannevar Bush. Washington, D. C.: National Science Foundation, July, 1945 (reprinted July, 1960). 220 pp.

SOCIAL SECURITY—PROGRAMS, PROBLEMS, AND POLICIES. William Haber and Wilbur J. Cohen. Homewood, Ill.: Richard D. Irwin, 1960. 606 pp. Price, $8.75.

SOCIAL WELFARE FORUM, THE—1960. Official Proceedings, 87th Annual Forum, National Conference on Social Welfare, Atlantic City, N. J., June 5-10, 1960. New York, N. Y.: Columbia University Press, 1960. 271 pp. Price, $5.00.

SOURCES OF INFORMATION ON BEHAVIORAL PROBLEMS OF ADOLESCENCE. An Index to Scientific Studies and Their Sources Dealing with Youth from Ages 14 to 22. Compiled by the Committee on Academic Education, American Psychiatric Association, with the professional assistance of Vaclav Mostecky of the Harvard Law Library and his staff. Washington, D. C.: American Psychiatric Association, 1960. 96 pp. Price, $3.00.

STEPS TO BETTER WRITING. Hilary H. Milton, with the assistance of George B. DeGennaro. College Park, Md.: Professional Press, 1959. 98 pp. Price, $2.75.

STUDY ON TRAFFIC IN PERSONS AND PROSTITUTION. United Nations Publication. New York, N. Y.: American Social Health Association, 1959. 57 pp. Price, $.50.

TENDERNESS AND TECHNIQUE: NURSING VALUES IN TRANSITION. Genevieve Rogge Meyer. Los Angeles, Calif.: Institute of Industrial Relations, 1960. 160 pp. Price, $2.75.

WELFARE IN AMERICA. Vaughn Davis Bornet. Norman, Okla.: University of Oklahoma Press, 1960. 319 pp. Price, $4.95.

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

Raymond S. Patterson, Ph.D., F.A.P.H.A.

The Old Grow Older—Spectacular reductions in mortality among children tend to obscure the recent progress made at older ages. Reductions are both relative and absolute, and women have made considerately greater gains than men on both counts. Discussions of the trends of major causes of death and the outlook for the years ahead are promised in succeeding papers.

ANON. Trends in Survival at Older Ages. Statist. Bull. Metrop. Life Insur. Co. 41,9:1 (Sept.), 1960.

Dispelling Darkness—What's being done nationally (not what should be being done) to prevent blindness is the burden of this brief but revealing review. Though more and more funds are being devoted to research, the still unmet and critical needs are great, as is evidenced by the finding that among 23,000 blind persons studied in a recent survey, the cause was classified as unknown to science or not specified in 56 per cent of cases.

BERENS, C. Prevention of Blindness. Sight-Saving Rev. 30,3:132 (Fall), 1960.

Success Story—When polio vaccine was added to the usual triple DPT vaccine, the antigenic responses of both the polio and the diphtheria components were enhanced whereas the tetanus and pertussis responses were essentially the same as in the DPT alone.

Bordt, D. E., et al. Poliomyelitis Component in Quadruple Antigen. J.A.M.A. 174,9:1166 (Oct. 29), 1960.

Progress with Safety—You probably know about the present position of the PHS in the matter of oral polio vaccine. Not only is the official statement of the Surgeon General here, along with the appointed committee's recommendations, but there is also a useful summary of Soviet-American discussions on foreign experience with live vaccines. The committee, incidentally, is concerned about the manner in which the vaccine is to be used for the potentiality of reversion to a virulent strain may constitute a hazard if the vaccine is improperly used.

Burney, L. E. Oral Poliovirus Vaccine. Pub. Health Rep. 75,10:869 (Oct.), 1960.

"Safe, Nutritious, and Flavorful"—These comforting quotations may not come as a complete surprise: "Frozen foods handled according to good commercial practice are (see heading). . . . Bacterial spoilage occurs only on gross mishandling. . . . T. spiralis dies out rapidly in frozen pork. . . . Food law officials and industry associations are taking vigorous action to improve handling of frozen foods."

Burr, H. K., and Elliott, R. P. Quality and Safety of Frozen Foods. J.A.M.A. 174,9:1178 (Oct. 29), 1960.

Sociologic Methodology — This searching inquiry into relationships between family or social situations and such diseases or hazards as tuberculosis, accidents, and suicides calls for a lot of hard concentration, but the effort should surely be worth while for anyone tempted to look for such relationships in the health problems that may be plaguing his bailiwick.

Chen, E., and Cobb, S. Family Structure in Relation to Health and Disease. J. Chronic Dis. 12,5:544 (Nov.), 1960.

You'd Have Guessed This—Obese women walked only two miles a day as against 4.9 for normal females (for men the figures were 3.7 and 6). Obese women were more passive generally than fat men, which suggests that inactivity may play more of a part in putting fat on a woman than on a man—though a little more getting about would seem to be good for both.

Chirico, A., and Stunkard, A. J. Physical Activity and Human Activity. New England J. Med. 236,19:935 (Nov. 10), 1960.

Limitless Water? — Health men, generally, should know what water works men are told in these papers about the pilot plant projects now under construction to demonstrate the possibilities in converting saline to fresh water. The account, in two parts, is told by the men who must surely be most conversant about the financial details of this monumental research, and the papers cover methods, prospects and economics.

Cywin, A., and Finch, L. S. What Water Works Men Should Know About Saline Water Conversion. Water Works Eng. 113,11:968 (Nov.), 1960.

Psychiatric Rehabilitation — The question, why do we hestitate to employ a former patient in the mental hospital?, is answered here by "some general rules" for deciding who can be safely employed, and in what capacities. Though a hospital may have responsibility in rehabilitating former patients, it is always the present patients who must have the right of way in deciding the ultimate answer. An interesting paper.

Davidson, H. A. The Mental Hospital and the Emotionally Disabled Employee. Nursing Outlook 8,11:618 (Nov.), 1960.

Taking Chances with Cleanliness—It costs money to keep a hospital clean, it says here. One hospital estimated that it would cost $44,000 a year—or 50 cents per day per patient. On the other hand it might cost more to defend a dirty hospital against workman's compensation or patient claims. "It would be cheaper to clean up than to pay up" are the last words of this paper.

GOHR, F. Hospital Sanitation. Sanitarian 23,2:75 (Sept.-Oct.), 1960.

Pessimism Compounded—A British symposium on teenagers' sexual promiscuity and resulting rising incidence of venereal diseases goes pretty much over the same grounds and reaches pretty much the same pessimistic conclusions that some of our recent native symposia have reached. Despite penicillin and earnest preventive programs, the venereal infections increase abroad as they do here and promiscuity grows apace there as it does here—the latter is an assumption without impressive statistical confirmation, however—while sex education receives mostly lip service on both sides of the Atlantic.

KING, A. J., and WISDOM, A. R. Venereal Diseases and the Teenager (and two related papers). Roy Soc. Health J. 80,5:412 (Sept.-Oct.), 1960.

For Writers, A Must—Whether or not your professional interest, training, or curiosity is such as to draw you to this paper—a ten-year history of live virus vaccine research—you should not miss it because it is an outstanding and sparkling sample of the way to make a dull technical subject readable, stimulating, and even quietly amusing.

KOPROWSKI, H. Tin Anniversary of the Development of Live Virus Vaccine. J.A.M.A. 174,8:972 (Oct. 22), 1960.

Living Meetings—You may have a quick and curt answer to the question, are so many meetings necessary? But don't let it deter you from examining this formula for coming to an objective answer. The formula was worked out in Connecticut.

MASTORGI, A. A. Are So Many Meetings Necessary? Nursing Outlook 8,11:628 (Nov.), 1960.

Home Town Psychiatry—Discussers of preventive psychiatry—and their names are legion—will find it helpful to read about this pioneering undertaking now getting under way in a Canadian province. Cottage-style psychiatric centers are being set up on a regional basis in which, and from which, therapeutic services and community programs will emanate—thus avoiding the dehumanizing effects of the huge and hidden-away "asylum" on the one hand, and on the other, bringing the psychiatric services closer to supporting general medical care and public health services.

RANDS, S. Community Psychiatric Services in a Rural Area. Canad. J. Pub. Health 51,10:404 (Oct.), 1960.

This You'd Anticipate—"Radiation preservation (of food) is still in the research stage. . . . No irradiation process can be used until . . . government agencies approve it. . . . Such approval is not likely until . . . studies have been completed. . . ." This method appears to be several years away from commercial utilization.

ROBINSON, H. E., and URBAIN, W. M. Radiation Preservation of Foods. J.A.M.A. 174,10:1310 (Nov. 5), 1960.

Lest We Forget—It has been assumed that two or more doses of formalin-treated poliovirus vaccines would always be required. But experience now suggests that lasting protection against the disease should become obtainable with a single dose, says the man who knows, and who adds: the assumption that killed vaccines are merely a first stage awaiting the perfection of a live

virus vaccine seems to have underestimated the potentialities of noninfectious viral antigens. ..

SALK, J. E. Persistence of Immunity After Administration of Formalin-Treated Poliovirus Vaccine. Lancet 7153:715 (Oct. 1), 1960.

Good Reporters Wanted—May we have more of this! It is an objective and factual account of what's going on in Alaska. It was written by a competent reporter and is based upon both published and unpublished records and interviews with staff members of state and federal agencies and organizations now at work in our 49th state. The result is a most readable and skillfully illustrated story and one that anyone in health work will enjoy reading. How many easterners really know all that's going on in the West, or southerners about what's new in the North, and vice versa, of course.

SIMMET, R. Alaska: Frontier for Health Services. Pub. Health Rep. 75,10:877 (Oct.), 1960.

Is Prophylaxis Necessary—The answer to the question posed in the title (see below) is that in Sweden, at any rate, the increasingly mild nature of whooping cough there, when coupled with the neurologic complications arising in about one of every 6,000 vaccinations, makes the continuance of routine prophylactic pertussis shots a questionable procedure. The same considerations may apply in other countries, thinks the author.

STROM, J. Is Universal Vaccination Against Pertussis Always Justified? Brit. M. J. 5207:1184 (Oct. 22), 1960.

If additional information is desired regarding the articles listed in this bibliography, please communicate directly with the publications in which they appeared; the addresses are furnished for your convenience.

Brit. M. J. (British Medical Journal), British Medical Association House, 19 Tavistock Sq., London, W.C.1, England.

Canad. J. Pub. Health (Canadian Journal of Public Health), 150 College St., Toronto 5, Canada.

J.A.M.A. (Journal of the American Medical Association), 535 N. Dearborn St., Chicago, Ill.

J. Chronic Dis. (Journal of Chronic Diseases), C. V. Mosby, 3207 Washington Blvd., St. Louis, Mo.

Lancet, 7 Adams St., Adelphi, London, W.C.2, England.

New England J. Med. (New England Journal of Medicine), Massachusetts Medical Society, 8 The Fenway, Boston 15, Mass.

Nursing Outlook, American Journal of Nursing Company, 2 Park Ave., New York 16, N. Y.

Pub. Health Rep. (Public Health Reports), Gov. Ptg. Office, Washington, D. C.

Roy. Soc. Health J. (Royal Society for the Promotion of Health Journal), 90 Buckingham Palace Road, London, S.W.1, England.

Sanitarian (National Association of Sanitarians), University of Denver, UPC, Department of Sanitary Science, Denver 10, Colo.

Sight-Saving Rev. (Sight-Saving Review), National Society for the Prevention of Blindness, Inc., 1790 Broadway, New York 19, N. Y.

Statist. Bull. Metrop. Life Insur. Co. (Statistical Bulletin of the Metropolitan Life Insurance Company), One Madison Avenue, New York 10, N. Y.

Water Works Eng. (Water Works Engineering), 305 East 45th Street, New York, N. Y.

CREDIT LINES

The Journal cannot furnish copies of items mentioned in Credit Lines. Please send requests to addresses given.

Perinatal Mortality and Morbidity

In 1959 the American Medical Association published "A Guide for the Study of Perinatal Mortality and Morbidity." This was prepared by the Committee on Maternal and Child Care of AMA's Council on Medical Service. The APHA was among the organizations endorsing this guide and participating in its development. The AMA has now published "Supplementary Material for the Study of Perinatal Mortality and Morbidity" which suggests methods that hospital medical staffs and study committees can use in reviewing work done and measuring progress. Included is the AMA Perinatal Code Sheet and a proposal for its use: "first, in a trial run project involving possibly 100,000 deliveries, and eventually . . . most hospital deliveries in the United States." A sample prenatal record form, various suggested hospital records and medical considerations are also discussed. Copies are available from the AMA, 535 North Dearborn Street, Chicago 10, Ill.

Death to Pests

"Pesticide Handbook—1960," now in its 12th edition, lists more than 7,000 insecticides, fungicides, herbicides, rodenticides and other agricultural chemicals and equipment, and gives the active ingredients and the manufacturers of each. As in earlier editions (see A.J.P.H., Sept., 1956, page 1160) both the technical and trade names of compounds are used. College Science Publishers, P. O. Box 798, State College, Pa., paperbound $1.75, clothbound $3.25.

Blood Transfusing in America

A national reciprocal agreement for the interchange of blood between the American Red Cross and the American Association of Blood Banks was announced in the fall of 1960. The new plan is designed to make it easier to supply blood for patients hospitalized away from home. It will also help alleviate temporary blood shortages wherever they may occur. The AABB is represented in every state except Alaska. ARC affiliates in the blood program are in 40 states and the District of Columbia.

Issued at approximately the same time as the announcement was "The Nation's Blood Transfusion Facilities and Services: A Report by the Joint Blood Council." The JBC, formed to coordinate professional efforts in the field, consists of representatives from the American Medical Association, National Red Cross, Hospital Association, Society of Clinical Pathologists, and Association of Blood Banks.

This report, the JBC's initial effort, is based on a survey begun in 1957. Among the facts it turned up: 50 Red Cross blood centers collect 47 per cent of all blood, 1,503 hospitals collect about 30 per cent, and 100 community blood banks collect 23 per cent; in New England the Red Cross collects 70 per cent of all blood and hospitals collect the other 30 per cent, whereas in the West South Central region, community blood banks collect about 50 per cent of all blood and hospitals collect 40 per cent.

The Joint Blood Council, Incorporated, 1832 M Street, N.W., Washington 6, D. C.; $3.

Speech and Hearing: Abstracts

The American Speech and Hearing Association and Gallaudet College have founded Deafness Speech and Hearing Publications, and now publish DSH Abstracts, a quarterly. Volume 1, No. 1 appeared in October, 1960. A training grant from the Office of Vocational Rehabilitation helped make this publication possible. The 336 abstracts in the first issue are distributed among five sections: hearing, hearing disorders, speech, speech disorders, and general. Titles of 172 graduate theses written in 1958 are also listed.

Subscriptions ($8 a year) and correspondence: Kenneth O. Johnson, Business Manager, DSH Publications, 1001 Connecticut Ave., N.W., Washington 6, D. C. Editor is Stephen P. Quigley, Ph.D., Gallaudet College, Washington, D. C.

A Community Studies Its Health

Johnson County, Kans., is a complex mixture of rurality, small towns and rapidly expanding new suburbia. "Spotlight on Johnson County, Kansas: A Health Study, 1959" records the story of the people in this community who determined to scrutinize their own health problems and to assess the resources available for handling them.

Prime mover of the study was the local League of Women Voters. The story is told of how its interest spread to other groups and of the steps taken to enlist the help of official and voluntary agencies in the state and county.

In the first phase of the study a look was taken at existing facilities, personnel, and organizations. Next, household interviews were conducted in a randomly selected sample of 7 per cent of the families in the county. Interviewers used a pretested questionnaire, parts of which were patterned after the National Health Survey. Findings and recommendations are presented through the reports of the study group's committees which represented the five basic areas of special interest to this community: public health, mental health, school health, chronic diseases and aging, and acute care.

In format this publication has the advantage over many of its kind, coming in a handy pocket-book size. Inquiries as to availability may be addressed to Health Education Division, Kansas State Board of Health, State Office Building, Topeka.

"The Mongoloid Baby"

This is the title of a recent addition to the series of Children's Bureau publications for parents of children with handicapping conditions. It deals briefly with what is known and not known about mongolism, advises parents on the probable adjustments they may need to make, and poses some of the major questions the family needs to answer when it is deciding between home care and placement for the child. Children's Bureau folder No. 50-1960; 10 cents from Government Printing Office, Washington 25, D. C.

The Health of Health Workers

The Public Health Service regards its "An Occupational Health Program for Hospital Employees" as supplementary to the American Hospital Association-American Medical Association's outline of "Guiding Principles for an Occupational Health Program in a Hospital Employee Group" and other references. The booklet attempts to answer some of the questions an administrator might ask about staffing, equipping, record-keeping, and costs in these programs. Hospitals employ over a million persons in this country and account for nearly two-thirds of the experienced labor force in health services. This brochure should

help foster more sound health programs for employees in the nation's hospitals, which, indeed, have the potential of being leaders in the field of occupational health. PHS Publication No. 725. One free copy from Occupational Health Program, PHS, Washington, D. C.

Disaster Sanitation

"Would you know what to do if you were isolated by an enemy attack or natural disaster? Would you be able to fight back and help others restore order, or would you be included in the 'mounting toll' due to failure to take some simple precautions?" These editorial questions open the August, 1960, Virginia Health Bulletin's discussion of the many precautionary steps that can be taken before, during, and after such emergencies. Special attention is given to conditions that would prevail in case of a nuclear attack or accident. Appropriate material for both health agency personnel and the public. Information on availability from State Department of Health, P. O. Box 1877, Richmond 15, Va.

Nursing Facility Care: Michigan

The Bureau of Public Health Economics, School of Public Health, University of Michigan, has collected facts on nursing homes which will enable the Michigan community to move ahead knowledgeably with its programs of care in these facilities.

Information for "Michigan Nursing Facilities and Their Patients: A Source Book of State and County Data" was obtained from all the 61 county-operated facilities and all the 486 privately-operated nursing homes that are either licensed or approved by state agencies. At the time of study, they housed an estimated 15,056 patients, on all but 49 of whom a patient census schedule was completed. Author Kenton E. Winter was director of the survey.

Among the findings: only 24 per cent of the occupants of facilities were admitted directly from general hospitals, indicating that "the nursing home is not viewed as a place providing post-hospital convalescent care"; the requirements of a large majority of the patients were such that they could not have been cared for in private dwellings; some 93 per cent are suffering from one or more diseases, chiefly of the nervous and circulatory systems; only 15 per cent could be called homeless or in need of shelter alone; recreational or social programs are limited or completely absent in most facilities. Controverted is "the frequently-made assertion that need for nursing facility care is heavily the result of a lack of familial concern over the fate of elder generation members."

Research Series No. 8, Bureau of Public Health Economics, 1960, 172 pages. Price not listed.

Monthly Statistical Signposts

September saw the first public issue of the monthly, "Health Education and Welfare Indicators," a companion publication to HEW's annual "Trends" (see A.J.P.H. August, 1960, p. 1240). "Indicators" will feature statistical measurements of conditions in the whole social sphere on a month to month basis. Current changes will be analyzed and related to selected annual data. "Trends," on the other hand, furnishes perspective on long-term developments. Source notes in both can be used as guides by those interested in exploring the literature more intensively. Expected to average 55 pages. U. S. Government Printing Office, Washington 25, D. C.; 35 cents a copy, $3.50 a year.

NEWS FROM THE FIELD

WHO News

Executive Board Prepares for Assembly

The Executive Board, which met at Geneva in November, will ask the Fourteenth World Health Assembly to allot the sums of $107,250 in 1961, and $110,033 in 1962, to health activities in the new Republic of the Congo (Leopoldville). These amounts would be in addition to the contributions expected from the United Nations. The assembly is due to open on February 7 in New Delhi.

A regular working budget of $21,576,480 for WHO's work in 1962, higher than the one originally proposed by the director-general, was approved for referral to the World Health Assembly. The board was told early in its two-week session that the Malaria Eradication Special Account has fallen short of about $5 million for 1961. Later it was announced that the United States will give $4 million and the Federation of Malaya $4,257 to this fund for 1961. The board will recommend to the next assembly that some part of the cost of the malaria eradication program be financed through WHO's regular budget.

The technical discussion at the Fourteenth World Health Assembly will be on "Recent Progress in Tuberculosis Control." The board chose "Mental Health in Public Health Planning" as the theme of discussions at the Fifteenth World Health Assembly, in 1962.

Some 200 Million are Goitrous

The total number of people in the world suffering from goiter has been estimated at nearly 200 million, according to "Endemic Goitre," a 412 page monograph, No. 44 in the WHO Series. This is a revision and updating of six articles which appeared in the December, 1958, issue of the WHO Chronicle. The September, 1960, WHO Chronicle carries a digest of the monograph.

Areas of endemic goiter tend to follow mountain ranges, but also include low-lying areas, such as the basin of the Great Lakes and the Netherlands. In this hemisphere, eight states of Mexico are reported to have had more than two million goiter sufferers in 1952, out of a total population of about ten million. In El Salvador, with a population of less than two million, 329,000 people were affected.

Experience in mass prophylaxis with iodized salt is now available from several countries. Switzerland's program, begun in 1923, gives an excellent demonstration of results. In Lausanne, the percentage of school children with normal thyroids rose from 42.3 in 1923, to 99.3 in 1937; since 1930, no child has had a visible goiter.

The monograph costs $8. Single issues of WHO Chronicle are 30 cents. Columbia University Press, 2960 Broadway, New York 27, N. Y.

Europe's Health Since the War

A five-month-old baby was chosen as the "cover boy" for a special European issue of World Health (September-October) "because of his pretty smile and his healthy well-kept appearance . . . Infant mortality in Europe fell by 43 per cent from 1947 to 1957."

Other advances are noted in graph form for the same period. Statistics, based on data from 15 countries containing nearly half the European population, show that child mortality dropped by 57.1 per cent, child mortality from communicable disease by 77.5 per cent, mortality from tuberculosis by 72.6 per cent, and general mortality by 9.6 per cent.

A special section, "Europe Is Healthy,

But . . .," deals with the present and emerging health problems of an increasingly long-lived population. Leaving out of account North America and Australasia, the European's average age is the highest in the world.

Election Returns: Fluoridation

By late November, the American Dental Association reports, at least one million citizens had been tallied as the "losers" in the elections, regardless of political affiliation. This figure represents the approximate population of communities in which fluoridation proposals are known to have been defeated at the ballot box. Known "winners" were an estimated 40,000 people in six localities in Kansas, Illinois, and Oregon. Fluoridation was defeated in towns and counties in California (including Sacramento), Illinois, Kentucky, Michigan (Saginaw), Minnesota, Missouri (Joplin), New Jersey, Ohio (Cincinnati), Oregon, Pennsylvania, and Wisconsin.

"If the Individual Is Unable to . . ."

In the presidential address at the 11th Annual Meeting of the American Association of Medical Clinics (New Orleans, October 6-8), Russel V. Lee, M.D., head of the Palo Alto (Calif.) Medical Clinic, urged that the medical profession and governmental agencies at all levels work together to deliver adequate medical care to all Americans.

In a paper entitled "Render unto Caesar," Dr. Lee stated that "Access to health services of high quality is a fundamental right which government must guarantee if the individual is unable to do so." However, "The individual's own effort is the most important single element in the preservation and promotion of his health." To this end he urged that the United States Department of Health, Education, and Welfare sponsor an intensive campaign of public health education, using every medium of mass communication, "to make America the best educated nation in matters of health." He also suggested that a federal health insurance commission might be set up, similar to ICC, FTC, and other regulatory commissions, to establish criteria for acceptable health insurance plans and perhaps to design ideal policies.

In the executive director's annual report to the AAMC, Edwin P. Jordan, M.D., cited the "astonishing scientific development" of medical practice, the changing economics of medical care, and the improvement of transportation as factors promoting the growth of medical clinics.

More than three times as many "true" group medical practice units exist in the United States today as in 1946, S. David Pomrinse, M.D., chief, Health Professions Branch, Division of Public Health Methods, Public Health Service, told the AAMC in a preliminary report on a survey of group practice in the United States, conducted in 1959. (A "true" medical practice group is defined as having three or more full-time physicians providing services in more than one medical field or specialty, with their combined income distributed according to a prearranged plan.)

Harold D. Caylor, M.D., of the Caylor-Nickel Clinic, Bluffton, Ind., succeeded Dr. Lee as president of AAMC.

New Assistant Surgeons General

In line with the recommendations of the Study Group on Mission and Organization of the Public Health Service, the Surgeon General created and filled three Public Health Service positions in November.

James M. Hundley, M.D., formerly with the National Institutes of Health in nutrition research and research administration, is appointed an Assistant Surgeon General, serving directly under

Assistant Surgeon General for Program Arnold B. Kurlander. He will be responsible for field relationships with the Regional Medical Directors of Health Mobilization and of International Health.

Harry G. Hanson has been named associate chief of the Bureau of State Services, with the rank of Assistant Surgeon General, working in environmental health. He will temporarily retain his present post as director of the Robert A. Taft Sanitary Engineering Center in Cincinnati.

Aaron W. Christensen, M.D., formerly deputy chief, Division of Indian Health, has been appointed to the second new associate chief position in the Bureau of State Services, with the rank of Assistant Surgeon General. He will be concerned with community health services.

Facilities and Funds: Education

The National Fund for Graduate Nursing Education has been established to help meet the need for an adequately educated corps of nurse leaders in America. The Rockefeller Foundation and other benefactors gave financial assistance to the Fund in its organizational phase, following a study by the Institute of Research and Service of Teachers College, Columbia University, of institutional costs of graduate nursing education. The study was made possible by a grant from the Sealantic Fund.

According to the study, of the 460,000 active nurses in America, less than 2 per cent, or 7,000, hold masters' degrees to qualify them for teaching, administrative, or other leadership positions. The 30 fully accredited graduate nursing education programs in the country at the present time are granting masters' degrees to about 1,100 nurses a year, but the current need, the study indicates, is for nearly four times this number. The first year's goal of the Fund is to raise $1,000,000, considered the minimum additional amount needed for these 30 programs in preparing nurse leaders.

President of the Fund is George F. Smith, president of Johnson and Johnson. Fund offices are at 280 Madison Avenue, New York 17, N. Y.

The Henry Lee Shattuck International House of the Harvard School of Public Health was dedicated on November 9 as a "home-away-from-home" for single and married, foreign and American students. The house, a group of three apartment buildings, is named for a Boston attorney, long a benefactor and a former treasurer of Harvard. Opened in September, the buildings are now home for 141 persons including 71 students, wives, and children from 22 foreign countries. The students are enrolled in the Schools of Public Health, Law, Business Administration, Medicine and Divinity at Harvard, the Massachusetts Institute of Technology, and Boston University.

The American Medical Association's annual report on medical education indicates that a sharp rise in construction of medical school facilities is expected in 1960-1961—an increase of 140 per cent over the figure for the previous year. Construction begun by 30 schools in 1959-1960 was valued at over $74 million.

The present maximum enrollment possible for the schools is reported to be 8,188; if the same schools were able to expand under "ideal circumstances," they could enroll a maximum of 9,894. First-year enrollment for 1959-1960 was 8,173, compared with 8,128 for the preceding year. The record number of students receiving M.D. degrees in 1960 totaled 7,081, compared with 6,860 in 1959 and the previous record of 6,977 in 1955.

During 1959-1960, the University of Florida College of Medicine and Dentistry graduated their first classes. West

Virginia University School of Medicine, expanding to a full four-year program, will be eligible for approval as a four-year school in 1961-1962. The University of Kentucky College of Medicine matriculated its first class in September, 1960.

News of the States

The Florida State Board of Health announced in October that all 67 counties in the state are now covered by full-time county health departments. The culmination of approximately 30 years' effort toward this goal came about when the St. Johns County Health Department (St. Augustine) was inaugurated October 1, 1960. Charles L. Newberry, M.D., formerly with the Oregon State Health Department, is the new health officer.

Enabled by a state law passed in 1960, the Massachussets Department of Public Health has approved the establishment of the Boston Metropolitan Air Pollution Control District. This replaces the smoke abatement district created in 1910. Cities and towns in contiguous territory may later be admitted to the Boston District, and similar districts in the Commonwealth may be formed upon approval of the State Department of Public Health. The department is authorized to make rules and regulations for the district. Official personnel are permitted to enter and inspect all places and premises for air pollutants, as well as to detain for inspection any motor vehicle deemed to be a source of contamination.

The California State Department of Mental Hygiene was authorized by the state legislature in 1960 to create three positions for community organization specialists in its State-Local Mental Health Services Section. Incumbents will help local communities assess their service needs, mobilize community resources, and interpret the program of the department. The first of the three positions has been filled by Ely Axelrod, M.P.H., who will serve in 15 central California counties.

The New York State Department of Mental Hygiene has divided the state into ten mental health regions, each with its own advisory committee. The committees will work toward a better integration of the mental health services provided in communities and in state institutions. Although all counties will be assigned to a region, membership of counties on regional advisory committees is limited to those counties with an established community mental health board. Twenty-eight counties so qualify. Chairman and professional directors of such boards and directors of state mental institutions in the geographical subdivision will make up the regional committees. Representatives of the Department of Mental Hygiene's Community Mental Health Services Section will serve as secretaries for the regional committees.

Official—Voluntary Cooperation

In New Jersey's East Orange an estimated 15,000 out of the 80,000 population are over age 60. This fact has prompted a closer liaison there between the city health department and the Community General Hospital in their focus on the chronic illness problem. The two agencies are jointly developing a variety of needed community resources with the support of many social service groups in the area.

One result of cooperative planning is a cervical cytology program for hospital in- and outpatients which begins this month. The health department is providing a technician and necessary supplies. The hospital is supplying facilities and professional direction. The health

department will maintain the records and supply follow-up services.

Plans are also afoot, and inservice training in progress, for the public health nursing section of the health department to follow-up discharges from the mental health unit of the hospital, including home visit services when indicated by the attending physician. The local mental health association will provide some financial assistance for this project.

Elsewhere in New Jersey, Bergen County's Board of Chosen Freeholders established a Division of Public Health and Preventive Medicine in November. This now provides interested municipalities in the county with public health direction, consultation services, and other aids on a cost basis. The division has its offices in the Bergen Pines County Hospital. In announcing this new service, the board pointed out that the state has set up new minimum health standards which are to be met by all towns by April, 1961. About 23 of the county's 70 municipalities "are not now equipped to meet such standards, and to do so (without the new service) would make the cost prohibitive to them," it was said. James G. Roney, M.D., Dr.P.H., formerly director, Butler County (Pa.) Health Department, heads the new division.

Groups Elect 1960-1961 Officers

Officers of the American Board of Dental Public Health elected in October are: president, Chester V. Tossy, D.D.S.; vice-president, John T. Fulton, D.D.S.; and secretary-treasurer, Donald J. Galagan, D.D.S.

(The board will hold its next certifying examination on October 12 and 13, in Philadelphia, in conjunction with the 102nd Annual Meeting of the American Dental Association. Candidates must submit their applications not later than June 15, 1961, to Dr. Galagan, Division of Dental Public Health and Resources, Bureau of State Services, PHS, Washington 25, D. C.)

The American Association of Public Health Physicians elected the following officers at its annual meeting in San Francisco in October: president—Henry G. Nestor, M.D., director of public health, Marion County Health Department, Indianapolis, Ind.; president-elect—Harold M. Erickson, M.D., deputy director of public health, California State Department of Public Health, Berkeley; vice-president — Edward F. Gliwa, M.D., deputy state health officer, Delaware State Board of Health, Wilmington; and secretary-treasurer—J. M. Bistowish, M.D., director, Leon County Health Department, Tallahassee, Fla.

The Association of Military Surgeons has elected Leroy E. Burney, M.D., Surgeon General of the Public Health Service, as its president. First vice-president (there are six) is Major General James P. Cooney, MC, USA, retired, vice-president for medical affairs, American Cancer Society, New York. Colonel Robert E. Bitner, MC, USA, retired, is secretary.

Officers of the Conference of Public Health Veterinarians for the coming year are: president, Colonel Mervyn B. Starnes; president-elect, Joe W. Atkinson, D.V.M.; secretary-treasurer, Colonel Robert L. Hummer. Henry A. Holle, M.D., medical officer in charge, U. S. Quarantine Station, PHS, Staten Island, N. Y., received CPHV's Resolution of Appreciation at the annual conference in San Francisco.

Mexican Border Association Meeting

The United States-Mexico Border Public Health Association reported in October that its Annual Meeting, held in Hermosillo, Sonora, April 4-8, 1960,

"was acclaimed by those in attendance as the most successful meeting in its 18 years of existence." The Minister of Health of Mexico, the Surgeon General of the U. S. Public Health Service, and the Director of the Pan American Sanitary Bureau were among the 350 delegates present.

The first of three plenary sessions featured three subjects — Status of Malaria Eradication in Mexico, Quarantine Procedures along the Border, and Recruitment of Students for the School of Nursing in Mexico. The second session was devoted to a panel discussion of the Control of Diarrheal Disease; the third dealt with Arthropod-Borne Viral Encephalitis.

The 19th Annual Meeting will be held June 25-29 in San Diego, Calif., in conjunction with the 28th Annual Meeting of the Western Branch of the American Public Health Association. Secretary of the border association is Dr. Ulpiano Blanco, 501 U. S. Court House, El Paso, Tex.

PERSONALS

CHARLES ALTHAFER, M.P.H.,† formerly a streams biologist, and a recent graduate of the University of Michigan School of Public Health, is now director of health education, Oregon Tuberculosis and Health Association, Portland.

NORMAN W. ANDERSON, M.D. (Col., MC, USA, Ret.), formerly commanding officer, U. S. Army Specialty Treatment Center, Landstuhl, Germany, is now director, Division of Health of the Aging, Kansas State Board of Health, Topeka.

LUTHER A. BLACK, Ph.D.,* chief of milk sanitation, Milk and Food Research, Robert A. Taft Sanitary Engineering Center, Cincinnati, Ohio, has received the 1960 Citation Award of the International Association of Milk and Food Sanitarians.

JOHN J. BOURKE, M.D., M.P.H.,* formerly executive director, New York State Joint Hospital Survey and Planning Commission, is now assistant commissioner for hospital review and planning, New York State Department of Health, Albany.

RENA E. BOYLE, Ph.D., formerly nurse consultant, Division of Nursing, Public Health Service, Washington, D. C., is now director, Department of Baccalaureate and Higher Degree Programs, National League for Nursing, New York City.

ALLEN D. BRANDT, Sc.D., formerly chief industrial hygiene engineer, Medical Department, is now manager of the new Industrial Health Engineering Department, Bethlehem Steel Corporation, Bethlehem, Pa.

HORACE A. BROWN, M.P.H.,* formerly executive director, Connecticut Heart Association, Hartford, is now general consultant, American Heart Association, New England Region.

MARCOS CHARNES, M.D., M.P.H.,* of Santiago, Chile, formerly acting chief, is now chief, Fellowships Branch, Pan American Sanitary Bureau, with headquarters in Washington, D. C.

GALE E. COONS, M.P.H.,† formerly chief of health education and information, Division of Dental Public Health, PHS, Washington, D. C., is now executive secretary, Indiana State Dental Association, Indianapolis.

HOWARD NORVIN COOPER, M.D.,† formerly chief of mental health, Alameda County Health Department, Calif., is now deputy medical director, New York City Community Mental Health Board.

DONALD A. COVALT, M.D.,† professor of physical medicine and rehabilitation, New York University-Bellevue Medical College, has been elected president, American Congress of Physical Medicine and Rehabilitation.

HAROLD W. DEMONE, JR., Ph.D.,† formerly director, Division of Alcoholism, Massachusetts Department of Public Health, is now executive director, The Medical Foundation, Inc., Boston.

ONEITA A. DONGIEUX,† formerly assistant supervisor of public health nurses, District Health Department, Jackson, Miss., is now instructor in public health nursing, University of Mississippi, University City.

ALIR DORIA,† engineer, Sanitary Construction Department, Sao Paulo, Brazil, received an Allied Chemical Award for Excellence gold medal at the 1960 Congress of the Interamerican Association of Sanitary Engineers (AIDIS), in Montevideo, Uruguay.

BEATRICE FINKELSTEIN,* nutritionist, Physiology Branch, Aerospace Medicine Division, Wright-Patterson Air Force Base, Ohio, has received the Association of Military Surgeons' McLester Award, established by the J. B. Roerig Company Division of Chas. Pfizer and Company, Inc., New York, for outstanding work in the field of nutrition and dietetics.

THOMAS FRANCIS, JR., M.D.,* professor and chairman, Department of Epidemiology,

* Fellow.
† Member.

University of Michigan School of Public Health, has received a Distinguished Faculty Achievement Award from the university.

HAROLD T. FUERST, M.D.,† formerly chief, Division of Epidemiology and Diagnosis, Bureau of Preventable Diseases, New York City Department of Health, is now director of the Bureau, succeeding MORRIS GREENBERG,* M.D., deceased.

JOSEPH H. GERBER, M.D., Dr.P.H.,* formerly medical officer in charge, Indian Health Area Office, Aberdeen, S. D., is now director, Center for Aging Research, National Institutes of Health, Bethesda, Md.

LYDIA G. GIBERSON, M.D.,* assistant vice-president, Metropolitan Life Insurance Company, has received the 1960 Award for The Outstanding Professional Woman of the Year of the Business and Professional Women's Clubs of New York.

CLAIRE E. HEALEY, M.D.,* formerly health officer, Chicago Office, is now medical assistant, Division of Local Health Services, Illinois Department of Public Health, Springfield.

GRACE HUSSEY, M.D., M.P.H.,* formerly assistant director, is now director, Division of Maternal and Child Health Services, Massachusetts Department of Public Health, Boston.

DORIS JOHNSON, Ph.D.,* director, Department of Dietetics, Grace-New Haven Community Hospital (Conn.), has been reelected president of the American Dietetic Association.

JOSEPH KADISH, Ed.D.,† formerly assistant director, Health Education Division, Health Insurance Plan of Greater New York, is now education specialist, National Association for Mental Health, New York City.

MARK KENYON, Ph.D., M.P.H.,† formerly director, Program for the Prevention of Crippling, Delaware State Board of Health, is now executive director, Nassau County Medical Society, Garden City, N. Y.

ROBERT H. KOKERNOT, M.D., D.V.M.,† formerly with The South African Institute for Medical Research, Johannesburg, is now with the School of Hygiene and Public Health, Johns Hopkins University, Baltimore, Md.

ROBERT C. KRUTZ,† formerly assistant administrator, Citizens General Hospital, New Kensington, Pa., is now administrator, Centre County Hospital, Bellefonte, Pa.

KENNETH S. LANDAUER, M.D.,* formerly director, Respiratory and Rehabilitation Center, National Foundation, New York City, is now vice-president for medical affairs, National Cystic Fibrosis Research Foundation, New York, N. Y.

NICHOLAS J. LAVNIKEVICH, M.P.H.,† formerly program director, is now executive director, Connecticut Heart Association, Hartford.

VIRGINIA MATREGRANO, R.N.,† is now public health nursing instructor, Pediatric-Allergy Research Development, Johns Hopkins University Medical School, Baltimore, Md.

RICHARD L. MEILING, M.D., formerly associate dean, is now dean of medicine, Ohio State University College of Medicine, Columbus.

ISABEL L. MUNGEN, R.N., M.P.H., formerly public health nurse consultant, mental health, Georgia State Department of Health, is now public health nurse consultant, mental health, New Jersey State Department of Health, Trenton.

RUTH E. RIVES, R.N.,* chairman, Department of Public Health Nursing, State University of New York Upstate Medical Center, Syracuse, has retired.

EMILIE G. SARGEANT, R.N.,* executive director, Visiting Nurse Association, Detroit (Mich.), was one of four alumni of the University of Michigan honored with an Outstanding Achievement Award by the university in November, 1960.

MAX SHAIN, assistant professor, Sloan Institute Hospital Administration, Cornell University, is on leave as research associate, Hospital Planning Council for Metropolitan Chicago (Ill.).

HAROLD SHULL, M.P.H.,† has been appointed health educator, Public Health District 1, Hardin, Montana State Board of Health.

CONSTANTINE STAMATOVICH, M.D., formerly a supervising psychiatrist, Creedmoor State Hospital, Queens Village, N. Y., is now deputy assistant commissioner, New York State Department of Mental Hygiene.

MARTHA J. THOMASON,* formerly chief, Nutrition Division, Cook County Department of Public Health, Chicago, Ill., is now associate chief, Nutrition Section, Michigan Department of Health, Lansing.

EDGAR J. YOUNG, M.D., D.P.H., formerly chief, Federal Emergency Health Services Division, Department of National Health and Welfare, Dominion of Canada, is now executive director, Canadian Public Health Association, Toronto.

* Fellow.
† Member.

DEATHS

FRANCIS A. DULAK, M.D.,* secretary, Board of Health, Chicago, Ill. (Health Officers Section).

KNUT J. KJELLBERG, M.D.,† of Djursholm, Sweden, in August, 1960 (Maternal and Child Health Section).

CONFERENCES AND DATES

American Public Health Association, Eighty-Ninth Annual Meeting, Detroit, Mich., November 13-17, 1961.

State and Regional Public Health Meetings—January, February, and March, 1961:

Texas Public Health Association. Texas Hotel, Fort Worth. March 5-8.

Meetings of Other Organizations:

American Association of School Administrators. San Francisco, Calif. January 25-28.

American Orthopsychiatric Association. New York, N. Y. March 23-25.

Council on Social Work Education. Montreal, Canada. February 1-4.

International Conference of Social Work (10th). Rome, Italy. January 8-14.

National Dairy Council. Louisville, Ky. February 7-9.

National Health Forum. Waldorf Astoria Hotel, New York, N. Y. March 13-16.

National Swimming Pool Institute. Adolphus and Baker Hotels, Dallas, Tex. January 7-10.

United Community Funds and Councils of America, Conference of Community Welfare Council Leaders. Biennial. Pittsburgh, Pa. January 12-13.

White House Conference on Aging. Washington, D. C. January 9-13.

University of Oslo International Summer School offers second time: MEDICAL CARE AND PUBLIC HEALTH SERVICES IN NORWAY. (Registration limited) July 1-28, 1961 in Oslo, Norway. Two weeks of lectures and local visits in Norway; 14-day field trip. Write: Oslo International Summer School, Northfield, Minnesota.

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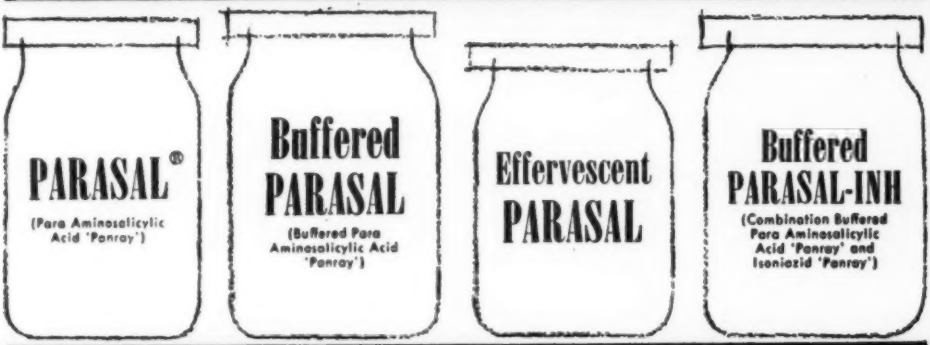

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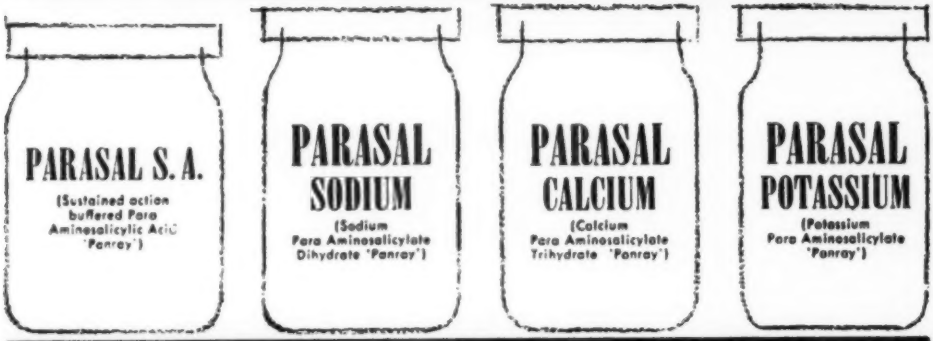

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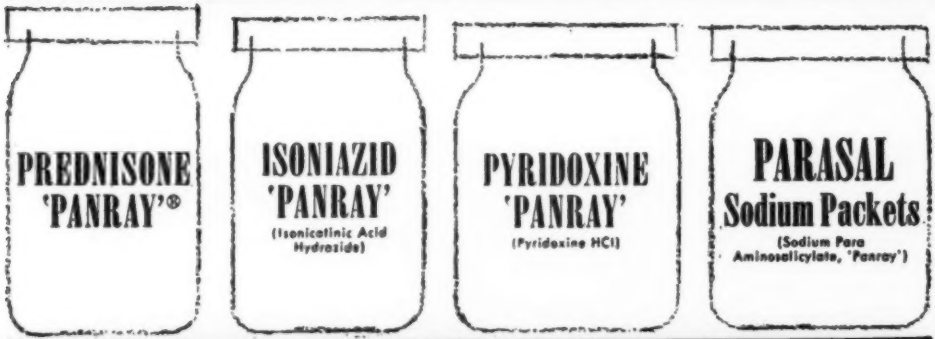

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